

Chapter Number
10**Gaseous Exchange**All Punjab Past Board Papers
2014 - 2020**Smart Syllabus**

(10.1) Gaseous Exchange in Plants (Pg.2-4) (10.2) Gaseous Exchange in Humans, (10.2.1) The Air Passageway (10.2.2) The Mechanism of Breathing (Pg.4-8) (10.3) Respiratory Disorders (Bronchitis, Pneumonia, Asthma) (10.3.1) Bad Effects of Smoking (Pg.11-15)

Class Work:

Questions: Multiple Choice Questions (1- 6 , 9 - 10) (PTB: Pg # 16)

Home Work:

Short Questions (1,2,3) Understanding the Concepts (1,2,4) (PTB: Pg # 17)

Lecture Number 1: (PTB: Pg # 2 to 4)**10.1****Gaseous Exchange in Plants**All Punjab Past Board
Papers**MCQ's**

(Multiple Choice Questions)

2014 - 2020

- Intake of oxygen form environment and removal of carbon dioxide is called:** (MUL-II,SWL-I)(SGD-GI)(FSD-I,MUL-II,SWL-I)
(A) Cellular respiration (B) Excretion
(C) Gaseous exchange (D) Secretion
- For gaseous exchange, the leaves and young stems have _____ in their epidermis.** (RWP-I,FSD-I)(LHR-GI)(GUJ-II,MUL-I,SGD-I)
(A) Stomata (B) Lenticels (C) Companion cells (D) Ground cells
- The percentage of CO₂ in exhaled air is:** (DGK-II,RWP-GII,SWL-I,MUL-I,SGD-II)
(A) 02% (B) 04% (C) 06% (D) 08%
- The percentage of oxygen from air which we inspired is:** (LHR-I,FSD-GI,MTN-GII)
(A) 15% (B) 21% (C) 25% (D) 28%
- Stoma are abundantly present:** [LHR-I,GUJ-I,FSD-II,RWP-II]
(A) on upper epidermis of leaf (B) on stem
(C) in xylem cells (D) in phloem cells
- Most of the gaseous exchange in a plant leaf occurs through:** [LHR-II,FSD-I/II]
(A) Cuticle (B) General surface (C) Lenticels (D) Stomata
- Stomata are present in:** [LHR-I,GUJ-II,RWP-I,FSD-I/II,MUL-I]
(A) Xylem (B) Phloem (C) Epidermis (D) Endodermis

Answers

| | | | | | | | |
|----|--------------------------------|----|-------------|----|---------------|----|---------|
| 1. | (c) Gaseous exchange | 2. | (A) Stomata | 3. | (B) 04% | 4. | (B) 21% |
| 5. | (A) on upper epidermis of leaf | 6. | (D) Stomata | 7. | (C) Epidermis | | |

All Punjab Past Board Papers

Short Questions
(Subjective Type)

2014 - 2020

1. What is meant by cellular respiration?

Ans: Cellular respiration is the process in which the C-H bonds in the food are broken by oxidation reduction reactions and the energy is transformed into ATP. (RWP-GII)(FSD-GI)(SWL-GII)(SGD-I/II)

2. Describe aerobic respiration.

Ans: Aerobic Respiration: In aerobic respiration, oxygen is used and there is complete oxidation of food material. Carbondioxide and water are also produced in aerobic respiration. (LHR-I/II,DGK-GII)(SWL-GII,SGD-II)

3. What is meant by gaseous Exchange? Also define breathing.

Ans: Gaseous Exchange: Taking in of oxygen and giving out of carbon dioxide is termed as "gaseous exchange". (LHR-I,GUJ-GII,MUL-I/II,SGD-I/II,SWL-I/II)

Breathing: The term breathing is used for the process through which animals take air in their bodies to get oxygen from it and then give out the air to get rid of carbon dioxide.

4. What is the difference between breathing and cellular respiration?

Ans. Difference between Breathing and Cellular Respiration: [SHL-I/II,LHR-I/II,FSD-I/II,MUL-I/II,GUJ-I/II]

| Breathing | Cellula Respiration |
|--|---|
| The term breathing is used for the process through which animals take air in their bodies to get oxygen from it and then give out the air for getting rid of carbon dioxide. | The sum of mechanical and bio - chemical processes by which gaseous exchange takes place by an organism. Cellular respiration is the process in which the C-H bonds in the food are broken by oxidation reduction reactions and the energy is transformed into ATP. |

5. Explain Stomata.

Ans: Stomata: Stomata are microscopic pores present in epidermis of leaves and young stems for gaseous exchange and water vapours. [LHR-I,GUJ-I][FSD-I][BWP-II,MUL-I/II,SGD-I/II]

6. Differentiate between stomata and air spaces.

Ans: Difference between stomata and air spaces: (FSD-GI,SGD-I/II,SWL-I/II,MUL-I/II)

| Stomata | Air Spaces |
|---|--|
| "The leaves and young stems have stomata in their epidermis. The gaseous exchange occurs through these stomata. | The inner cells of leaves (mesophyll) and stems have air spaces among them, which help in the exchange of gases. |

7. How does the gaseous exchange occur in leaves and young stems?

Ans: The leaves and young stems have stomata in their epidermis. The gaseous exchange occurs through these stomata. The inner cell of leaves and stems also have air spaces among them, which help in the exchange of gases. [LHR-I/II,GUJ-I/II,FSD-I,SWL-II,SGD-I]

8. How will you differentiate between a stoma and a lenticel?

Ans: Difference between Stoma and Lenticel: [LHR-I,GUJ-I/II,MTN-I,SWL-I][SGD-I][MTN-II][DGK-I]

| Stoma | Lenticel |
|---|--|
| Stoma is the microscopic pore in the epidermis of leaf. This is the passageway for gases and water vapours. | Lenticel is a pore in the layer of bark in woody stem for the exchange of gases. |

9. What is meant by gaseous exchange?

[SHL-I/II, LHR-I/II, FSD-I/II, MUL-I/II, GUJ-I/II]

Ans: Gaseous Exchange: Organisms get the oxygen needed for cellular respiration from their environment and provide it to their cells. The carbon dioxide produced during cellular respiration is taken out of the cells and ultimately from the body. Taking in oxygen and giving out of carbon dioxide is termed as gaseous exchange.

Lecture Number 2: (PTB Pg # 2 to 10)

10.2

Gaseous Exchange in Humans

The Air Passageway, The Mechanism of Breathing

All Punjab Past Board
Papers

MCQ's

(Multiple Choice Questions)

2014 - 2020

- Which structure helps in taking air out of lungs? (LHR-I, GUJ-I, FSD-I, MUL-I, FSD-GI)
(A) Nasal cavity (B) Bronchus (C) Bronchiole (D) Diaphragm
- The cavity in which lungs are located is called: (LHR-I, GUJ-I, FSD-I, MUL-I, FSD-GI)
(A) Thoracic cavity (B) Oral cavity (C) Buccal (D) Abdominal cavity
- The chest wall is made up of _____ pairs of ribs. (LHR-I, GUJ-I, FSD-I, MUL-I, FSD-GI, SGD-I)
(A) 8 (B) 12 (C) 16 (D) 20
- A thick muscular structure is present below the lungs: (GUJ-I, FSD-I, MUL-I, FSD-GI, SGD-I)
(A) kidney (B) liver (C) diaphragm (D) ureter
- Length of trachea is: (LHR-I, GUJ-I, FSD-I, MUL-I, SGD-I, DGK-II, SWL-I)
(A) 12 cm (B) 14 cm (C) 16 cm (D) 18 cm
- The glottis is guarded by a flap of tissue called the: [LHR-I, SWL-I, DGK-I, SGD-I]
(A) trachea (B) glottis (C) bronchi (D) epiglottis
- Humans breathe in normal circumstances. i.e. at rest: [SGD-II, BWP-II, MUL-I/II]
(A) 16-20 times per minute (B) 70-80 times per minute
(C) 80-100 times per minute (D) 10-20 times per minute
- During exercise or other hard physical works the breathing rate may increase up to _____ per minute. [LHR-I/II, GUJ-I/II, FSD-I/II, MUL-I/II, DGK-I/II]
(A) 30-40 times (B) 10-20 times (C) 20-30 times (D) 40-50 times
- The gift of speaking is given only to: (MTN-GII, SWL-GII)(LHR-I/II, GUJ-I/II, SWL-I/II)
(A) Man (B) Monkey (C) Parrot (D) Crow
- The larynx is made of: [GUJ-II, FSD-I/II, LHR-I/II, MUL-I/II]
(A) cartilage (B) trachea (C) glottis (D) alveoli
- All the alveoli on one side constitute a: [LHR-I/II, FSD-I/II, SWL-I/II, DGK-I/II, MUL-I/II]
(A) liver (B) heart (C) stomach (D) lung
- A muscular passage common to both food and air is: (SWL-GII)(LHR-I/II, SWL-I/II)
(A) pharynx (B) larynx (C) alveoli (D) trachea
- The empty space present in nose is called: [LHR-I/II, SWL-I/II, GUJ-I/II, SGD-II]
(A) Bronchi (B) Nasal Cavity (C) Eardrum (D) Pharynx
- _____ blood vessels surrounds the Alveoli. [LHR-I, SWL-I, DGK-I, SGD-I]
(A) Artery (B) Arteriol (C) Capillaries (D) Vein

15. The Larynx is also called this: (A) Trachea (B) Voice Box (C) Alveoli (D) Bronchioles [LHR-I/II, SWL-I/II, GUJ-I/II, SGD-I/II]
16. A narrow opening present at the floor of pharynx is called: (A) Trachea (B) nostril (C) larynx (D) glottis (SWL-GII)(LHR-I/II, SWL-I/II)
17. The amount of oxygen in expired air in human body is: (A) 10% (B) 16% (C) 20% (D) 36% (SWL-GII)(LHR-I/II, SWL-I/II)
18. % age of O_2 in expired air during breathing at rest is _____ percent. (A) 16 (B) 21 (C) 79 (D) 30 [LHR-I/II, SWL-I/II, GUJ-I/II]
19. Many chemicals in smoke increase the production of _____ blood cells. (A) White (B) Red (C) Platelets (D) Osteocytes [LHR-I/II, SWL-I/II, GUJ-I/II, SGD-I/II]
20. Venule unit to form: (A) Pulmonary vein (B) Pulmonary artery (C) Trachea (D) Alveoli [LHR-I, SWL-I, DGK-I, SGD-I]
21. The number of lobes in right lung is: (A) 1 (B) 2 (C) 4 (D) 3 [LHR-I/II, SWL-I/II, GUJ-I/II, SGD-I/II]

Answers

| | | | |
|----------------------|------------------------|-------------------------------|------------------------|
| 1. (D) Diaphragm | 2. (A) Thoracic cavity | 3. (B) 12 | 4. (C) diaphragm |
| 5. (A) 12 cm | 6. (D) epiglottis | 7. (A) 16-20 times per minute | 8. (A) 30-40 times |
| 9. (A) Man | 10. (A) cartilage | 11. (D) lung | 12. (A) pharynx |
| 13. (B) Nasal Cavity | 14. (C) Capillaries | 15. (B) Voice Box | 16. (D) glottis |
| 17. (B) 16% | 18. (A) 16 | 19. (C) Platelets | 20. (A) Pulmonary vein |
| 21. (D) 3 | | | |

All Punjab Past Board Papers

Short Questions
(Subjective Type)

2014 - 2020

1. What is the function of mucus in nasal cavity?(write any two) (SWL-GI, MTN-GI)

Ans: Function of mucus in nasal cavity are as following:

- (i) The mucus present in nasal cavity filters the dirt particles from the air.
(ii) Mucus moistens and warms the incoming air and keeps its temperature nearly equal to that of the body.

2. Differentiate between Nasal Cavity and Nostril.

Ans: Difference between Nasal Cavity and Nostril:

| Nasal Cavity | Nostril is |
|--|---|
| The internal hollow part of the nose is called nasal cavity. | The openings through which nasal cavity opens to the outside are called nostrils. |

3. What is the function of hairs and mucous in the nose?

Ans: The hair in the nose trap the dust particles in the air while mucous warms the air entering in the nostrils. (MTN-GII, SWL-GII)(LHR-I/II, GUJ-I/II, SWL-I/II)

4. What is pharynx?

Ans: Pharynx is a muscular passage and is common to both for food and air. It extends [LHR-I/II, GUJ-I/II, SWL-I/II]

the opening of the oesophagus and the larynx. The air goes from the pharynx into the larynx.

5. **Define epiglottis. Write its function.** (MTN-GII,SWL-GII)(GUJ-GII)

Ans: The glottis is a narrow opening at the floor of the pharynx. The glottis is guarded by a flap of tissue called the epiglottis.

6. **Differentiate between glottis and epiglottis.** (LHR-I/II,GUJ-I/II,SWL-I/II)[FSD-II]

Ans: Difference between Glottis and Epiglottis:

| Glottis | Epiglottis |
|--|---|
| A narrow opening at the floor of pharynx called glottis. It leads to larynx. | The glottis is guarded by a flap of tissue called the epiglottis. |

7. **What is larynx? Where it is located?** (DGK-GI-II,SGD-GII,BWP-GII)

Ans: Larynx is a box, made of cartilage. It is also called the voice box. Larynx is located between pharynx and trachea.

8. **What is larynx? Why Larynx are called voice box?** [SGD-I/II,RWP-I,GUJ-II]

Ans: Larynx: Larynx is a box, made of cartilage. It is also called the voice box. Larynx is located between pharynx and trachea.

Voice Box: Larynx is also called voice box because two pairs of fibrous bands called vocal cords are stretched across the larynx. The vocal cords vibrate when the air passes through them. This vibration produces sounds. The vibrations in vocal cords and the movements of lips, cheeks, tongue and jaws produce specific sounds which result in speech.

9. **Describe windpipe or trachea. Where it is located?** (SGD-GII,MTN-GII)

Ans: Windpipe: Larynx continues to the trachea, which is also called the windpipe. It is about 12cm long tube which lies in front of the oesophagus. There are C-shaped cartilaginous rings in the wall of trachea. The cartilage keep the trachea from collapsing even when there is no air in it.

10. **Differentiate between Bronchi and Bronchioles.** [MUL-II,RWP-II]

Ans: Difference between Bronchi and Bronchioles:

| Bronchi | Bronchioles |
|---|---|
| The trachea divides into two smaller tubes called bronchi (Singular bronchus). The bronchi also have cartilaginous plates in their walls. Each bronchus enters into the lungs of its side and then divides into smaller branches. | Fine tube formed by the division of the bronchi is called bronchiole. The bronchioles progressively lose the cartilages as they become narrower. |

11. **What are alveoli? What is their function?** (RWP-I,MTN-II,RWP-II,LHR-I/II)

Ans: Alveoli: Each alveolar duct opens into a cluster of pouches called alveoli.

Function: The alveoli form the respiratory surface in human body. Each alveolus is a sac-like structure lined by a single layer of epithelial cells. It is bound on the outside by a network of capillaries.

12. **Write down the structure and function of Alveolus?** [LHR-I/II,RWP-I/II]

Ans: The sac-like structure lined by a single layer of epithelial cells is called alveolus. It is bound on the outside by a network of capillaries. It form the respiratory surface in human body.

13. What is meant by diaphragm?

Ans: Diaphragm: The thick muscular structure present below the lungs is called diaphragm. It makes the floor of chest cavity. It involve in the mechanism of breathing (Inspiration or Inhalation and Expiration or Exhalation).

14. What is meant by respiratory centre.

Ans: Respiratory: The rate of breathing is controlled by the respiratory centre in the brain. The respiratory centre is sensitive to the concentration of carbon dioxide in the blood.

15. What is the importance of C-shaped cartilagenous rings in the wall of trachea?

Ans: There are C-shaped cartilagenous rings in the wall of trachea. The cartilage keep the trachea from collapsing even when there is no air in it.

16. How specific sound for talking is produced?

Ans: Larynx is called voice box. Two pairs of fibrous bands called vocal cords are stretched across the larynx. The vocal cords vibrate when the air passes through them. This vibration produces sounds. The vibrations in vocal cords and the movements of lips, cheeks, tongue and jaws produce specific sounds which result in speech.

17. What are intercostal muscles?

Ans: The muscles which are attached to the ribs are called intercostal muscles.

18. What are Alveolar ducts and Alveoli?

Ans: Alveolar duct: The bronchioles progressively lose the cartilages as they become narrower. The bronchioles end as fine tubules called the alveolar ducts.
Alveoli: Each alveolar duct opens into a cluster of pouches called alveoli.

19. Define Bronchioles.

Ans: Bronchioles: Fine tube formed by the division of the bronchi is called bronchiole. The bronchioles progressively lose the cartilages as they become narrows.

Lecture Number 3: (PTB Pg # 11 to 15)

10.3

Respiratory Disorders

(Bronchitis, Pneumonia, Asthma) , Bad Effects of Smoking

All Punjab Past Board
Papers

MCQ's
(Multiple Choice Questions)

2014 - 2020

1. Which disease is not related to lungs:

- (A) Asthma (B) Emphysema (C) Myopia (D) Pneumonia

2. Cigarette smoke contains at least _____carcinogens.

- (A) 30 (B) 50 (C) 70 (D) 90

3. Inflammation of Bronchi or Bronchioles is called:

- (A) Cough (B) Bronchitis (C) Pneumonia (D) Asthma

4. Number of carcinogens present in tobacco smoke is:

- (A) 4,000 (B) 55 (C) 50 (D) 40

5. The world No Tobacco Day is celebrated every year on:

- (A) 11th May (B) 21st May (C) 25th May (D) 31st May

6. In non-smokers who are exposed to second hand smoke increase their heart disease risk by: (LHR-I/II, GUJ-I/II, SWL-I/II)(SGD-GII)
 (A) 15-20% (B) 20-30% (C) 25-30% (D) 30-45%
7. Total chemicals in tobacco smoke are: (LHR-I/II, GUJ-I/II, SWL-I/II)(MUL-I/II, SGD-I, SWL-I)
 (A) 1000 (B) 2000 (C) 3000 (D) 4000
8. If both lungs are infected the disease is called: (LHR-I/II, GUJ-I/II, SWL-I/II)
 (A) Typhoid (B) Double Pneumonia
 (C) Gout (D) Arthrites
9. Major types of Bronchitis are: (LHR-I/II, GUJ-I/II, SWL-I/II)
 (A) 1 (B) 2 (C) 3 (D) 4
10. The acute bronchitis usually lasts about: [SHL-I, MUL-I/II, SGD-I, DGK-I/II]
 (A) one week (B) two week (C) three week (D) four week

Answers

| | | | |
|-----------------|------------------|-------------------|-------------------------|
| 1. (C) Myopia | 2. (B) 50 | 3. (B) Bronchitis | 4. (C) 50 |
| 5. (D) 31st May | 6. (C) 25-30% | 7. (D) 4000 | 8. (B) Double Pneumonia |
| 9. (B) 2 | 10. (B) two week | | |

All Punjab Past Board Papers

Short Questions
(Subjective Type)**2014 - 2020**

1. Define bronchitis. How is it caused? (LHR-GI, FSD-GI, SGD-GI-II, BWP-GI, DGK-I/II)

Ans: Bronchitis is the inflammation of the bronchi or bronchioles. It results in excessive secretions of mucus into the tubes, leading to the swelling of tubular walls and narrowing of tubes.

Causes: It is caused by viruses, bacteria or exposure to chemical irritants e.g. tobacco smoke.

2. What is the difference between Acute Bronchitis and Chronic Bronchitis?

[SGD-II][LHR-I, GUJ-II, MTN-I, SGD-I/II, FSD-I, DGK-I, BWP-II, RWP-][SWL-I/II][MTN-II]

Ans: Difference between Acute Bronchitis and Chronic Bronchitis:

| Acute Bronchitis | Chronic Bronchitis |
|---|--|
| The acute bronchitis is usually lasts about two weeks and patient recovers with no permanent damage to the bronchi or bronchioles | In chronic bronchitis, the bronchi develop chronic inflammation. It usually lasts for three months to two years. |

3. Write down the causes and symptoms of pneumonia. [FSD-II, LHR-I/II, MUL-I/II]

Ans: Causes: The most common cause of pneumonia is bacterium, *Streptococcus pneumoniae*.

Symptoms: The symptoms of pneumonia include a cold that is followed by a high fever, shivering, and a cough with sputum production. Patient may become short of breath.

4. What is double pneumonia?

(MTN-GI-II, BWP-GI)(SGD-GI)(DGK-I/II, SWL-I/II)

Ans: Double pneumonia: Pneumonia is an infection of lungs. If this infection affects both lungs then, it is called double pneumonia. The most common cause of pneumonia is bacterium, *Streptococcus pneumoniae*.

5. Define asthma. Write down its causes.

[GUJ-I][DGK-I, SWL-I, FSD-II][RWP-II][MTN-II]

Ans: Asthma: Asthma is a form of allergy, in which inflammation of the bronchi, more mucous production and narrowing of the airways.

Causes: In asthma patients, the bronchi and bronchioles become sensitive to different allergens (allergy causing factors) e.g. dust, smoke, perfumes, pollens etc. When exposed to any of such allergens, the sensitive airways show immediate and excessive response of constriction. In this condition, the patient feels difficulty in breathing.

6. Write the symptoms of asthma.

[LHR-I, DGK-I, GUJ-I, II, FSD-II, SGD-II, BWP-II, RWP-I]

Ans: Symptoms: The symptoms of asthma vary from person to person. The major symptoms include shortness of breath (especially with exertion or at night), wheezing (whistling sound when breathing out), cough and chest tightness.

7. Write down the treatment of Asthma.

[LHR-I, DGK-II, MUL-I/II, FSD-I/II, SGD-II]

Ans: The chemicals with ability to dilate the bronchi and bronchioles are used in the treatment of asthma. Such medicine are given in the form of inhalers.

8. What is passive smoking?

(LHR-I, GUJ-II, MUL-II, SWL-I, RWP-GI)

Ans: Passive Smoking: The inhalation of smoke from another's smoking is called passive smoking.

9. Why passive smoking is dangerous for health?

[LHR-I/II, MUL-I/II, FSD-I, RWP-I]

Ans: Danger of Passive Smoking: Passive smoking (the inhalation of smoke from another's smoking) is also a cause of lung cancer. The smoke from the burning end of a cigarette is more dangerous than the smoke from the filter end.

10. Write down the name of chemical in cigarettes smoke which cause cancer.

[GUJ-I/II, MUL-I/II, SGD-I/II, RWP-I]

Ans: There are more than 50 carcinogens present in cigarettes smoke which cause cancer. The major one is nicotine.

11. Write the use of nicotine in the past.

(LHR-I, SGD-I/II, MUL-I/II, RWP-GII)

Ans: Use of Nicotine in the Past: Nicotine is a powerful poison and was widely used as an insecticide in the past. When inhaled through tobacco smoking, it reaches our circulatory system and not only hardens the walls of arteries but also damages the brain tissues.

12. Define arteriosclerosis.

[GUJ-I/II, MUL-I/II, SHL-I, SGD-II]

Ans: Arteriosclerosis: Many chemical in smoke increase the production of platelets. When platelets are more than the normal numbers, they make the blood viscous. This situation is called arteriosclerosis.

13. Write down the bad effects of smoking.

[SHL-II, LHR-I, BWP-I, FSD-I, MUL-I/II, SGD-I/II]

Ans: Bad Effects of Smoking: Smoking lead to the cancer in kidneys, oral, cavity, larynx, breast, bladder, pancreas and arteriosclerosis etc. Many chemicals in tobacco smoke damage the air pasageway, which lead to emphysema and other respiratory disorders.

14. Write two effects of smoking on circulatory system. [FSD-I,DGK-II][LHR-I/II,SGD-I]

Ans: Two Effects of Smoking on Circulatory System:

- (i) Smoking lead to the cancers in in kidneys, oral cavity, larynx, breast, bladder and pancreas etc.
- (ii) Many chemicals in tobacco smoke damage the air passageway, which leads to emphysema and other respiratory disorders.

15. Which bacterium is responsible for infection of Pneumonia.

[LHR-I,SGD-I,MUL-I,SWL-I/II,DGK-I/II]

Ans: Pathogen of Pneumonia: The most common cause of this infection is a bacterium called *Streptococcus pneumoniae*.



Home Work: Syllabus

Excercise

Questions: Multiple Choice Questions (1- 6 , 9 - 10) (PTB: Pg # 16)

Home Work:

Short Questions (1,2,3) Understanding the Concepts (1,2,4) (PTB: Pg # 17)

Multiple Choice Questions (MCQ's)

- (1) The process of gaseous exchange involves:
 - (a) Breakdown of C-H bonds to yield energy
 - (b) Physical movements that take air in and out of body
 - (c) Getting oxygen from the air and removing carbon dioxide
 - (d) Transport of oxygen by the blood to different parts of the body
- (2) Most of the gaseous exchange in a leaf occurs through:
 - (a) Stomata
 - (b) General surface
 - (c) Cuticle
 - (d) Lenticels
- (3) How many bronchi are there in the air passageway?
 - (a) One
 - (b) Two
 - (c) Many
 - (d) None
- (4) Where does the gaseous exchange occur in humans?
 - (a) Pharynx
 - (b) Trachea
 - (c) Bronchi
 - (d) Alveoli
- (5) Which structure actively helps in taking the air out of lungs?
 - (a) Nasal cavity
 - (b) Bronchus
 - (c) Bronchiole
 - (d) Diaphragm
- (6) The primary chemical stimulus for breathing is the concentration of:
 - (a) Carbon dioxide in blood
 - (b) Oxygen in blood
 - (c) Carbon dioxide in muscles
 - (d) Oxygen in muscles
- (9) Which process does not occur in the nasal cavity?
 - (a) Trapping of large dust particles
 - (b) Humidification of the inhaled air
 - (c) Warming of the inhaled air
 - (d) Exchange of gases
- (10) What type of blood vessels surrounds the alveoli?
 - (a) Artery
 - (b) Arteriole
 - (c) Capillary
 - (d) Vein

Answers

| | | | | | | | |
|----|---|----|-----------------------------|----|-----------------------|-----|---------------|
| 1. | (c) Getting oxygen from the air and removing carbon dioxide | 2. | (a) Stomata | 3. | (b) Two | 4. | (d) Alveoli |
| 5. | (d) Diaphragm | 6. | (a) Carbon dioxide in blood | 9. | (d) Exchange of gases | 10. | (c) Capillary |

Short Questions

Q.1: Differentiate between breathing and cellular respiration.

Ans. Breathing: Breathing is a process by which animals take air in their bodies to get oxygen from it and then give out air for removal of carbon dioxide.

Cellular respiration: Cellular respiration is the energy yielding process of cell in which the C-H bonds in food are broken by oxidation-reduction reaction.

Q.2: Trace the path of air from the nasal cavity to the alveoli.

Ans. The nasal cavity opens into pharynx by internal nostrils. Pharynx leads into larynx by glottis. Larynx leads into windpipe called trachea. Trachea divides into bronchi and each bronchus further divides into bronchioles. Each bronchiole opens into alveolar ducts and each alveolar duct into alveoli.

Q.3: How will you differentiate between a stomata and a lenticels?

Ans. Stomata: Stomata is pore present in epidermis of leaves and young stems for gaseous exchange.

Lenticel: Lenticel is a pore present in cork tissue below epidermis of woody stems and mature roots.

Understanding the Concepts

Q.1: How do the different parts of the plant body exchange gases with the environment?

Ans. For answer see Page # 8 in Al-Ghazali Rehnuma Notes.

Q.2: Write down the steps of inhalation and exhalation.

Ans. For answer see Page # 15 in Al-Ghazali Rehnuma Notes.

Q.4: How does the tobacco smoke damage the respiratory system?

Ans. For answer see Page # 28 in Al-Ghazali Rehnuma Notes.

Note: These are long Questions. For answer consult P.T.B/Al-Ghazali Rahnuma Notes.

Chapter Number
11

Homeostasis

All Punjab Past Board Papers
2014 - 2020

Smart Syllabus

(11.1) Homeostasis in Plants, (11.1.1) Removal of Extra Carbon dioxide and Oxygen, (11.1.2) Removal of Extra Water, (11.1.3) Removal of other Metabolic Wastes (Pg.18-20) (11.3) The Urinary System of Humans, (11.3.1) Structure of Kidney, (11.3.2) Functioning of kidney, (11.3.3) Osmoregulatory Function of Kidney, (Pg.22-26) -

Class Work:

Questions: Multiple Choice Questions (1- 9) (PTB: Pg # 29-30)

Home Work:

Short Questions (2) Understanding the Concepts (1 - 5) (PTB: Pg # 30)

Lecture Number 4: (PTB Pg # 11 to 20)

11.1 Homeostasis in Plants,
Removal of Extra Carbon dioxide and Oxygen, Removal of Extra Water,
Removal of other Metabolic Wastes

All Punjab Past Board
Papers

MCQ's
(Multiple Choice Questions)

2014 - 2020

- Broad leaves with large number of stomata on the upper side are found in:**
(LHR-I/II, GUJ-I/II, FSD-I/II, MUL-I, SGD-II, DGK-I)
(A) xerophytes (B) hydrophytes (C) halophytes (D) trees
- Example of Hydrophyte plants is:** (LHR-II, GUJ-I/II, FSD-I, MUL-I/II, SGD-I/II, DGK-II, SWL-II)
(A) Water lily (B) Cactus (C) Sea grass (D) Grass
- Such plants have deep roots to absorb maximum water from soil.**
(FSD-I/II, MUL-I/II, SGD-I/II, DGK-II, SWL-II)
(A) Hydrophytes (B) Xerophytes (C) Halophytes (D) Mesophytes
- This is an example of Halophytes.** (LHR-II, GUJ-I/II, FSD-I, MUL-I/II, SGD-I/II, DGK-II, SWL-II)
(A) sea grass (B) water lily (C) rose (D) cacti
- The process in which metabolic wastes are eliminated from body is called:**
(LHR-I/II, GUJ-I/II, FSD-I/II, MUL-I, SGD-II, DGK-I, SWL-I)
(A) Osmoregulation (B) Thermoregulation
(C) Homeostasis (D) Excretion
- The waste material that are removed by coniferous trees are called:**
(FSD-I/II, MUL-I/II, SGD-I/II, DGK-II, SWL-II)
(A) resins (B) gums (C) latex (D) musilage
- The plants which live completely or partially submerged in fresh water are called:** (LHR-II, GUJ-I/II, FSD-I, MUL-I/II, SGD-I/II, DGK-II, SWL-II)
(A) hydrophytes (B) halophytes (C) xerophytes (D) bryophytes
- The example of xerophytes is:** (LHR-I/II, GUJ-I/II, FSD-I/II, MUL-I, SGD-II, DGK-I, SWL-I)
(A) Water lilly (B) Funaria (C) Sea grass (D) Cactus

9. Waste materials that are secreted by Keekar:

(LHR-II, GUJ-I/II, FSD-I, MUL-I/II, SGD-I/II, DGK-II, SWL-II)
(A) Gums (B) Latex (C) Resins (D) Mucilage

10. It is formed due to condensation of water vapours on the plant surface:

(LHR-I/II, GUJ-I/II, FSD-I/II, MUL-I, SGD-II, DGK-I, SWL-I)
(A) Guttation (B) Transpiration (C) Dew (D) Sebum

11. The appearance of drops of water on tips of leaves is called:

(GUJ-I/II, MUL-I/II, SGD-I/II, DGK-II, SWL-II)
(A) Guttation (B) Diffusion (C) Osmosis (D) Osmoregulation

12. _____ is the name of outer region of longitudinal.

(LHR-I/II, GUJ-I/II, FSD-I/II, MUL-I, SGD-II, DGK-I, SWL-I)
(A) renal cartex (B) renal medulla (C) renal pyramids (D) renal pelvis

13. Plants having broad leaves with a large number of stomata on their upper surface are called:

(GUJ-I/II, MUL-I/II, SGD-I/II, DGK-II, SWL-II)

(A) Halophytes (B) Xerophytes (C) Hydrophytes (D) Mesophytes

14. Extra water is removed from plant body by:

(FSD-I/II, MUL-I/II, SGD-I/II, DGK-II, SWL-II)

(A) Transpiration (B) Kidney (C) Evaporation (D) Condensation

15. Which plant produces resins?

(LHR-II, GUJ-I/II, FSD-I, MUL-I/II, SGD-I/II, DGK-II, SWL-II)

(A) Tomato (B) Keekar (C) Rubber (D) Conifer

Answers

| | | | |
|---------------------|-----------------------|--------------------|----------------------|
| 1. (B) hydrophytes | 2. (A) Water lily | 3. (B) Xerophytes | 4. (A) sea grass |
| 5. (D) Excretion | 6. (A) resins | 7. (A) hydrophytes | 8. (D) Cactus |
| 9. (A) Gums | 10. (C) Dew | 11. (A) Guttation | 12. (A) renal cartex |
| 13. (C) Hydrophytes | 14. (A) Transpiration | 15. (D) Conifer | |

All Punjab Past Board
Papers

Short Questions
(Subjective Type)

2014 - 2020

1. How plants remove extra water from their body?

(LHR-I/II, MUL-I, SGD-I, DGK-I/II, SWL-I/II)

Ans: Extra water is removed from plant body by transpiration. Some plants such as grasses force extra water through special pores, present at leaf tips or edges, and form drops.

2. Differentiate between guttation and transpiration

(LHR-II, GUJ-I/II, FSD-I, MUL-I/II, SGD-I/II, DGK-II, SWL-II)

Ans: Difference between guttation and transpiration:

| Guttation | Transpiration |
|--|--|
| The appearance of drops of water on the tips or edges of leaves is called guttation . | The loss of water from plant surface in the form of vapours is called transpiration . |

3. Why transpiration does not occur at night?

(LHR-I/II, GUJ-I/II, FSD-I/II, MUL-I, SGD-II, DGK-I, SWL-I)

Ans: At night, transpiration usually does not occur because most plants have their stomata closed.

4. Differentiate between guttation and Dew.

(GUJ-I/II, MUL-I/II, SGD-I/II, DGK-II, SWL-II)

Ans: Difference between guttation and Dew:

| Guttation | Dew |
|---|---|
| Guttation is not to be confused with dew, which condenses from the atmosphere onto the plant surface. | Tiny drops of water that form an cool surface at night, when atmospheric vapour condense is called dew. |

5. From which plants resins , gums, latex , mucilage are obtained?

(LHR-I/II, GUJ-I/II, FSD-I/II, MUL-I, SGD-II, DGK-I, SWL-I)

Ans.

| Materials | Source |
|-----------|------------------|
| Resins | coniferous trees |
| Gums | Keekar |
| Latex | rubber plant |
| Mucilage | ladyfinger |

6. What is xerophyte?

(FSD-I/II, MUL-I/II, SGD-I/II, DGK-II, SWL-II)

Ans: Xerophyte: Xerophytes live in dry environments. They possess thick, waxy cuticle over their epidermis to reduce water loss from internal tissues. They have less number of stomata to reduce the rate of transpiration.

Example: Cactus.

7. What is meant by osmosis?

(FSD-I/II, MUL-I/II, SGD-I/II, DGK-II, SWL-II)

Ans: Osmosis is the movement of water from hypotonic solutions to hypertonic solutions through semipermeable membrane.

8. What is succulent organs?

(LHR-I/II, GUJ-I/II, FSD-I/II, MUL-I, SGD-II, DGK-I, SWL-I)

Ans: Succulent Organ: Some xerophytes have special parenchyma cells in stems or roots in which they store large quantities of water. This makes their stems or roots wet and juicy, called succulent organs. Cacti (singular: *Cactus*) are the common examples of such plants.

9. What is called guttation?

(LHR-I/II, MUL-I, SGD-I, DGK-I/II, SWL-I/II)

Ans: The appearance of drops of water on the tips or edges of leaves is called guttation.

10. How does the gaseous exchange occur in aquatic plants?

(LHR-II, GUJ-I/II, FSD-I, MUL-I/II, SGD-I/II, DGK-II, SWL-II)

Ans: Aquatic plants have broad leaves with a large number of stomata on their upper surfaces. This characteristic helps them to remove the extra amount of water. The most common example of such plants is water lily.

11. What is meant by metabolic waste?

(LHR-I/II, GUJ-I/II, FSD-I/II, MUL-I, SGD-II, DGK-I, SWL-I)

Ans: Metabolic Waste: Plants deposit many metabolic wastes in their bodies as harmless insoluble materials. For example, calcium oxalate is deposited in the form of crystals in the leaves and stems of many plants e.g. in tomato.

12. Write down two adaptations in xerophytes to prevent loss of water.

(LHR-II, GUJ-I/II, FSD-I, MUL-I/II, SGD-I/II, DGK-II, SWL-II)

Ans: Two Adaptations in Xerophytes:

- (I) Xerophytes live in dry environments. They possess thick, waxy cuticle over their epidermis to reduce water loss from internal tissues.
(II) They have less number of stomata to reduce the rate of transpiration.

13. What is meant by stomata? Write their function.

(FSD-I/II, MUL-I/II, SGD-I/II, DGK-II, SWL-II)

Ans: Stomata and their function: Stomata are microscopic pores present in epidermis of leaves and young stems for gaseous exchange and water vapours.

14. How calcium oxalate is removed in tomato plant as metabolic waste?

(GUJ-I/II, MUL-I/II, SGD-I/II, DGK-II, SWL-II)

Ans: Plants like tomato deposit many metabolic wastes in their bodies as harmless insoluble materials.

Example: In tomato plants the calcium oxalate as a metabolic waste is deposited in the form of crystals in the leaves and stems.

Lecture Number 5: (PTB Pg # 22 to 29)

11.3

The Urinary System of Humans

Structure of Kidney, Functioning of kidney, Osmoregulatory Function of Kidney

All Punjab Past Board
Papers

Short Questions
(Subjective Type)

2014 - 2020

1. What waste products are excreted by kidney?

(LHR-I/II, GUJ-I/II, FSD-I/II, MUL-I, SGD-II, DGK-I, SWL-I)

(A) Urea, water and salts

(B) Salts, water and carbondioxide

(C) Urea and water

(D) Urea and salts

2. Human Urinary system consist of:

(FSD-I/II, MUL-I/II, SGD-I/II, DGK-II, SWL-II)

(A) Kidneys

(B) Ureters

(C) Urinary bladder

(D) All of these

3. Urine is temporarily stored in which of these until it is released from body.

(GUJ-I/II, MUL-I/II, SGD-I/II, DGK-II, SWL-II)

(A) Kidney

(B) Ureter

(C) Urinary bladder

(D) Urethra

4. Ribs which protect the kidneys are:

(LHR-I/II, MUL-I, SGD-I, DGK-I/II, SWL-I/II)

(A) First two

(B) Last two

(C) Middle

(D) Last four

5. As per normal chemical composition the amount of water in the urine is:

(LHR-I/II, GUJ-I/II, FSD-I/II, MUL-I, SGD-II, DGK-I, SWL-I)

(A) 60%

(B) 70%

(C) 80%

(D) 95%

6. The typical volume of urine produced by an adult in liters per day is:

(LHR-II, GUJ-I/II, FSD-I, MUL-I/II, SGD-I/II, DGK-II, SWL-II)

(A) 2.4

(B) 1.4

(C) 4.2

(D) 4.1

7. The concave part of the kidney:

(FSD-I/II, MUL-I/II, SGD-I/II, DGK-II, SWL-II)

(A) Upper

(B) Lower

(C) Faces vertebral column

(D) Away from vertebral column

8. **The organ that filters the blood:** (LHR-II, GUJ-I/II, FSD-I, MUL-I/II, SGD-I/II, DGK-II, SWL-II)
 (A) Kidney (B) Stomach (C) Brain (D) Intestine
9. _____ **performs role in the maintenance of body temperature.** (FSD-I/II, MUL-I/II, SGD-I/II, DGK-II, SWL-II)
 (A) Lung (B) Skin (C) Kidney (D) Ears
10. **These are not filtered through the glomerular capillaries:** (LHR-I/II, MUL-I, SGD-I, DGK-I/II, SWL-I/II)
 (A) blood cells and proteins (B) fats and proteins
 (C) fats and salts (D) salts and proteins
11. **The average life time for a donated kidney is:** (FSD-I/II, MUL-I/II, SGD-I/II, DGK-II, SWL-II)
 (A) ten to eleven years (B) ten to fifteen years
 (C) five to ten years (D) fifteen to twenty years
12. **The maintenance of internal body temperature is called:** (LHR-II, GUJ-I/II, FSD-I, MUL-I/II, SGD-I/II, DGK-II, SWL-II)
 (A) Excretion (B) Osmoregulation
 (C) Homeostasis (D) Thermoregulation
13. **The functional unit of kidney is"** (LHR-I/II, GUJ-I/II, FSD-I/II, MUL-I, SGD-II, DGK-I, SWL-I)
 (A) Glomerulus (B) Bowman's capsule
 (C) Loop of Henle (D) Nephron
14. **In every kidney No. of Nephrons is about:** (LHR-I/II, MUL-I, SGD-I, DGK-I/II, SWL-I/II)
 (A) Less than 8 Lac (B) More than 10 Lac
 (C) More than 5 Lac (D) 5 Lac
15. **U Shape Renal Tubules is called:** (FSD-I/II, MUL-I/II, SGD-I/II, DGK-II, SWL-II)
 (A) Neuron (B) Pyramids (C) Loop of Henle (D) Cortex
16. **The weight of human kidney is about:** (LHR-II, GUJ-I/II, FSD-I, MUL-I/II, SGD-I/II, DGK-II, SWL-II)
 (A) 110 gm (B) 120 gm (C) 130 gm (D) 140 gm
17. **The main function of kidney is the formation of:** (LHR-I/II, FSD-I, DGK-I, SWL-I, MUL-II)
 (A) urine (B) blood (C) food (D) fat
18. **Normal urine contains amount of urea.** (FSD-I/II, MUL-I/II, SGD-I/II, DGK-II, SWL-II)
 (A) 9.3 g/l (B) 1.87 g/l (C) 95 g/l (D) 1.17 g/l
19. **The core temperature of Human Body is:** (LHR-I/II, MUL-I, SGD-I, DGK-I/II, SWL-I/II)
 (A) 37°C (B) 38°C (C) 39°C (D) 40°C

Answers

| | | | |
|-----------------------|----------------------------------|-------------------------------|--------------------------|
| 1. (C) Urea and water | 2. (D) All of these | 3. (C) Urinary bladder | 4. (B) Last two |
| 5. (D) 95% | 6. (B) 1.4 | 7. (C) Faces vertebral column | 8. (A) Kidney |
| 9. (B) Skin | 10. (A) Blood cells and proteins | 11. (B) ten to fifteen years | 12. (D) Thermoregulation |
| 13. (D) Nephron | 14. (B) More than 10 Lac | 15. (C) Loop of Henle | 16. (B) 120 gm |
| 17. (A) urine | 18. (A) 9.3 g/l | 19. (A) 37°C | |

All Punjab Past Board Papers

Short Questions
(Subjective Type)

2014 - 2020

1. Write four names of parts of urinary system.

Ans: (i) one pair of kidneys. (ii) one pair of ureters.
(iii) a urinary bladder (iv) urethra.

(LHR-I/II, FSD-I, DGK-I, SWL-I, MUL-I)

2. Differentiate between hilus and renal pelvis.

Ans: Difference between hilus and pelvis:

(LHR-I/II, MUL-I, SGD-I, DGK-I/II, SWL-I/II)

| Hilus | Renal Pelvis |
|--|--|
| Hilus is a depression near the centre of the concave area of the kidney. This is the area of the kidney through which ureter leaves kidney and other structure including blood vessels, lymphatic vessels and nerves enter and leave kidney. | Renal pelvis is the funnel- shape cavity into which the renal pyramic of kidney project. |

3. Differentiate between renal cortex and renal medulla.

Ans: The longitudinal section of the kidney shows two regions.

(GUJ-I/II, MUL-I/II, SGD-I/II, DGK-II, SWL-I)

1. Renal cortex 2. Renal medulla

| Renal cortex | Renal medulla |
|--|---|
| (1) Renal cortex is the outer part of kidney. (2) It is dark red in colour. | (1) Renal medulla is the inner part of kidney. (2) It is pale red in colour. |

4. What is functional unit of kidney?

Ans: The functional unit of kidney is called nephron. There are over one million nephron in each kidney. There are two parts of a nephron i.e renal corpuscle and renal tubule.

(FSD-I/II, MUL-I/II, SGD-I/II, DGK-II, SWL-I)

5. Write down the name of two main parts of nephron.

Ans: The main parts of nephron are: (LHR-I/II, FSD-I, DGK-I, SWL-I, MUL-I)

(a) The renal corpuscle is not tubular and has two parts i.e. glomerulus and Bowman's capsule.

(b) The renal tubule is the part of nephron which starts after Bowman's capsule.

6. Write down the function of Bowman's capsule in nephron.

Ans: Function of Bowman's Capsule in Nephron: Bowman's capsule is a cup-shape structure that encloses glomerulus. The material goes from glomerulus to Bowman's capsule where its selected re-absorption takes place.

(LHR-I/II, GUJ-I/II, FSD-I/II, MUL-I, SGD-II, DGK-I, SWL-I)

7. Write the name of two parts of Renal Corpuscle.

Ans: The two name of Renal Corpuscle are as follow: (FSD-I/II, MUL-I/II, SGD-I/II, DGK-II, SWL-I)

(i) Glomerulus (ii) Bowman's capsule.

8. Describe renal tubule.

Ans: Renal Tubule: The renal tubule is the part of nephron which starts after Bowman's capsule. It has three portions: (LHR-I/II, FSD-I, DGK-I, SWL-I, MUL-I)

1st portion: Its first portion is called the proximal convoluted tubule.

2nd portion: The second portion is U-shaped and is called the loop of Henle.

3rd portion: The third portion of renal tubule is the distal convoluted tubule.

9. What is meant by pressure filtration? (GUJ-I/II,,MUL-I/II,SGD-I/II,DGK-II,SWL-II)

Ans: Pressure Filtration: In the first step of urine formation, the blood enters the kidney via the renal artery and goes to many arterioles, and then to the glomerulus. The pressure of blood is very high and most of the water, salts, glucose and urea of blood is forced out of glomerular capillaries. This process is called pressure filtration.

10. What is glomerular filtrate? (LHR-II,GUJ-I/II,FSD-I,MUL-I/II,SGD-I/II,DGK-II,SWL-II)

Ans: Glomerular Filtrate: When blood enters the kidney via the renal artery, it goes to many arterioles, and then to the glomerulus. The pressure of blood is very high and so most of the water, salts, glucose and urea of blood is forced out of glomerular capillaries. This material passes into the Bowman's capsule and is now called glomerular filtrate.

11. What is meant by selective re-absorption? (GUJ-I/II,,MUL-I/II,SGD-I/II,DGK-II,SWL-II)

Ans: Selective Re-Absorption: It is a second step of urine formation. In this step 99% of the glomerular filtrate is reabsorbed into the blood capillaries surrounding to the renal tubule. It occurs through Osmosis, diffusion and active transport.

12. What is tubular secretion in the function of kidney?

(LHR-I/II,MUL-I,SGD-I,DGK-I/II,SWL-I/II)

Ans: Tubular Secretion: During third step of urine formation different ions, creatinine, urea etc. are secreted from blood into the filtrate in renal tubule. This is done to maintain blood at a normal pH (7.35 to 7.45). This process is called tubular secretion.

13. Write down the osmoregulatory function of kidney.

(FSD-I/II,MUL-I/II,SGD-I/II,DGK-II,SWL-II)

Ans: Osmoregulation is defined as the regulation of the concentration of water and salts in blood and other body fluids. Kidneys play an important role in osmoregulation by regulating the water contents of blood. It is an important process as excessive loss of water concentrates the body fluids whereas excess intake of water dilutes them.

14. When does kidney produce hypotonic and hypertonic urine.

(LHR-II,GUJ-I/II,FSD-I,MUL-I/II,SGD-I/II,DGK-II,SWL-II)

Ans: Hypotonic Urine: When there is excess water in body fluids, kidneys form dilute (hypotonic) urine. For this purpose, kidneys filter more water from glomerular capillaries into Bowman's capsule. Similarly less water is reabsorbed and abundant dilute urine is produced.

Hypertonic Urine: When there is shortage of water in body fluids, kidneys filter less water from glomerular capillaries and the rate of reabsorption of water is increased. Less filtration and more reabsorption produce small amount of concentrated (hypertonic) urine.

15. How does the papillary ducts from and where does it drain?

(LHR-I/II,GUJ-I/II,FSD-I/II,MUL-I,SGD-II,DGK-I,SWL-I)

Ans: Many collecting ducts join together to form several hundred papillary ducts which drain into renal pelvis.

16. What is loop of henle?

(LHR-II,GUJ-I/II,FSD-I,MUL-I/II,SGD-I/II,DGK-II,SWL-II)

Ans: Loop of Henle: The renal tubule is the part of nephron which starts after Bowman's capsule. Its first portion is called the proximal convoluted tubule. Next portion is U-shaped and is called the Loop of Henle.

17. What is meant by Renal Pelvis?

Ans: Renal Pelvis: All renal pyramids project into a funnel-shaped cavity called renal pelvis. Renal pelvis is the broader portion of ureter in kidney. Actually it is the base of ureter.

18. Give difference between afferent and efferent arteriole.

Ans: Bowman's capsule is a cup-shaped structure that encloses glomerulus. The capillaries of the glomerulus arise from the afferent arteriole and join to form the efferent arteriole.

19. What is Hilus?

Ans: Hilus: Hilus is a depression near the centre of the concave area of the kidney. This is the area of the kidney through which ureter leaves kidney and other structure including blood vessels, lymphatic vessels and nerves enter and leave kidney.

◆◆◆

Home Work: Syllabus

Excercise

Questions: Multiple Choice Questions (1- 9) (PTB: Pg # 29-30)

Home Work:

Short Questions (2) Understanding the Concepts (1 - 4) (PTB: Pg # 30)

Multiple Choice Questions (MCQ's)

(1) The human urinary system consist of :

- (a) Rectum, lungs, kidneys, ureters
- (b) Kidneys, ureters, urinary bladder
- (c) Skin, liver, lungs, kidneys
- (d) kidneys, ureters, urinary bladder, urethra

(2) Which organ is responsible for filtering the blood?

- (a) Intestine
- (b) Brain
- (c) Stomach
- (d) Kidney

(3) The tube between kidney and urinary bladder is the:

- (a) Ureter
- (b) Urethra
- (c) Renal tubule
- (d) Nephron

(4) 'Body balance' of water, salts, temperature and glucose is termed as:

- (a) Excretion
- (b) Tubular secretion
- (c) Homeostasis
- (d) Re-absorption

(5) Which the correct order for the path taken by urine after it leaves the kidneys?

- (a) Urethra, bladder, ureters
- (b) Bladder, ureters, urethra
- (c) Ureters, bladder, urethra
- (d) Bladder, urethra, ureters

(6) What is waste products are excreted by kidneys?

- (a) Urea, water & salts
- (b) Salts, water and carbon dioxide
- (c) Urea & water
- (d) Urea & salts

(7) What is the function of the ureter?

- (a) To store urine
- (b) To carry urine from the kidney to the bladder
- (c) To carry urine out of the body
- (d) To remove waste from the blood

(8) The two main functions of sweat are:

- (a) To keep the body cool and to remove excess proteins.
- (b) To keep the body warm and to filter the blood
- (c) To filter the blood and to remove waste products
- (d) To remove waste products and to cool the body

(9) Which would not be present in the filtrate entering the Bowman's capsule of nephron?

- (a) Water (b) Calcium ions (c) Blood cells (d) Urea

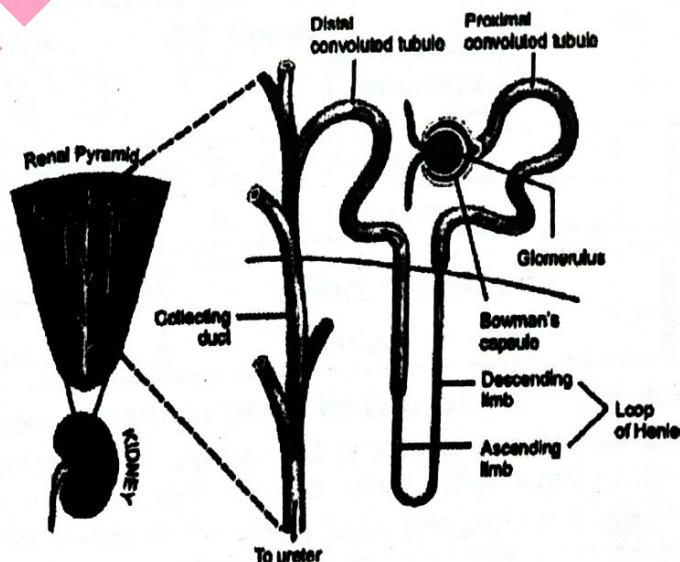
Answers

| | | | | | | | | | |
|---|--|---|---|---|---|---|-----------------|---|-------------------------------|
| 1 | (d) kidneys, ureters, urinary bladder, urethra | 2 | (d) Kidney | 3 | (a) Ureter | 4 | (c) Homeostasis | 5 | (c) Ureters, bladder, urethra |
| 6 | (a) Urea, water & salts | 7 | (b) To carry urine from the kidney to the bladder | 8 | (d) To remove waste products and to cool the body | 9 | (c) Blood cells | | |

Short Question

Q.2: Identify and label the following diagram:

Ans.



Function of kidney (Nephron)

Understanding the Concepts

Q.1: Describe the process of selective re-absorption in the kidneys.

Ans. For answer see **Page # 41** in Al-Ghazali Rehnuma Notes.

Q.2: How do the plants excrete extra water and salts from their bodies?

Ans. For answer see **Page # 30** in Al-Ghazali Rehnuma Notes.

Q.3: What is the functional unit of the kidney? Describe its structure and draw a labeled diagram.

Ans. For answer see **Page # 40** in Al-Ghazali Rehnuma Notes.

Q.4: What steps are involved in the formation of urine in the kidneys?

Ans. For answer see **Page # 41** in Al-Ghazali Rehnuma Notes.

Q.5: "Along with excretion, kidneys also play role in Osmoregulation." Comment on this statement.

Ans. For answer see **Page # 43** in Al-Ghazali Rehnuma Notes.

Note: These are long Questions. For answer consult **P.T.B/Al-Ghazali Rahnuma Notes.**



Chapter Number
12**Coordination and Control**All Punjab Past Board Papers
2014 - 2020**Smart Syllabus**

(12.1)Types of Coordination, (12.1.1)Coordinated Action, (12.2)HumanNervous System, (12.2.1)Nerve Cell or Neuron, (12.2.2)Divisions of the Nervous System, Brain, Spinal Cord, Peripheral Nervous System, (12.2.3)Reflex Action(Pg.32-41), (12.4)Endocrine System, (12.4.1)Important Endocrine Glands (complete), Feedback Mechanism.(Pg.47-51) **(PTB: Pg # 32 - 55)**

Class Work:Questions: Multiple Choice Questions (1,4,6 - 10) **(PTB: Pg # 53)****Home Work:**Short Questions (1-5,8), Understanding the Concepts (1-3,9-11) **(PTB: Pg # 54)****Lecture Number 6: (PTB Pg # 32 to 34)**

| | | |
|---------------------------------|---|-------------|
| 12.1 | Types of Coordination Coordination Action | |
| All Punjab Past Board Papers | MCQ's (Multiple Choice Questions) | 2014 - 2020 |

- Which one is coordinator in nervous coordination?** (LHR-I/II, GUJ-I/II, FSD-I/II, MUL-I, SGD-II, DGK-I, SWL-I)
(A) Glands (B) Brain and spinal cord
(C) Brain (D) Spinal cord
- Which type of coordination is found in plants?** (LHR-I/II, FSD-I, DGK-I, SWL-I, MUL-II)
(A) Chemical (B) Mechanical (C) Electrical (D) Nervous
- A coordinated action has _____ components.** (LHR-I/II, MUL-I, SGD-I, DGK-I/II, SWL-I/II)
(A) 2 (B) 3 (C) 4 (D) 5
- Effectors include.** (LHR-II, GUJ-I/II, FSD-I, MUL-I/II, SGD-I/II, DGK-II, SWL-II)
(A) Only muscles (B) Only glands
(C) Muscles and glands (D) Brain
- Action performed by effectors is.** (LHR-I/II, GUJ-I/II, FSD-I/II, MUL-I, SGD-II, DGK-I, SWL-I)
(A) Stimulus (B) Impuls (C) Response (D) Axon

Answers

| | | |
|------------------------------|-----------------|----------|
| 1. (B) Brain and spinal cord | 2. (A) Chemical | 3. (D) 5 |
| 4. (C) Muscles and glands | 5. (C) Response | |

| | | |
|---------------------------------|---|--------------------|
| All Punjab Past Board Papers | Short Questions (Subjective Type) | 2014 - 2020 |
|---------------------------------|---|--------------------|

- What is coordination? Write its two types.** (FSD-I/II, MUL-I/II, SGD-I/II, DGK-II, SWL-II)

Ans: Coordination: The tissues and organs in the bodies of multicellular organisms do not work independently of each other. They work together performing their many tasks as the needs of the whole body, this process is called coordination.

Types: There are two types of coordination in organisms:

- i. Nervous coordination brought about by nervous system.
- ii. Chemical coordination brought about by endocrine system.

2. **Differentiate between nervous coordination and chemical coordination?**

(LHR-II, GUJ-I/II, FSD-I, MUL-I/II, SGD-I/II, DGK-II, SWL-II)

Ans: Nervous coordination: In nervous coordination, brain and spinal cord are coordinators. They receive information and send message through neurons in the form of nerve impulses.

Chemical coordination: In chemical coordination, various endocrine glands play the role of coordinators. They receive information in the form of various chemicals and send messages by secreting particular hormones in blood.

3. **Write down the name of types of coordination in organisms.**

(LHR-I/II, GUJ-I/II, FSD-I/II, MUL-I, SGD-II, DGK-I, SWL-I)

Ans: There are two types of coordination in organisms:

- (i) Nervous coordination
- (ii) Chemical coordination

4. **What are the main components of coordination?** (LHR-I/II, FSD-I, DGK-I, SWL-I, MUL-II)

Ans: Components: A coordinated action have five components:

Stimulus → Receptor → Coordinator → Effector → Response

5. **How unicellular organisms co-ordinate their functions?**

(LHR-I/II, GUJ-I/II, FSD-I/II, MUL-I, SGD-II, DGK-I, SWL-I)

Ans: In unicellular organisms, the response against stimuli is given by chemicals for coordination.

6. **Define stimuli. Also give example.** (LHR-II, GUJ-I/II, FSD-I, MUL-I/II, SGD-I/II, DGK-II, SWL-II)

Ans: Stimuli: Stimulus can be defined as, any change in environment (external and internal), which can provoke a response in organism.

Examples of stimuli: Heat, cold, pressure, sound waves, presence of chemicals, microbial infections etc are examples of stimuli.

7. **Define receptors and give examples.** (LHR-I/II, GUJ-I/II, FSD-I/II, MUL-I, SGD-II, DGK-I, SWL-I)

Ans: The organs, tissues or cells which are specially built to detect particular type of stimuli are called receptors.

Example: Sound waves are detected by ears, light is detected by eyes and chemicals in air are detected by nose and so on.

8. **What are effectors? Give its two examples.** (FSD-I/II, MUL-I/II, SGD-I/II, DGK-II, SWL-II)

Ans: Effectors: Effectors are the parts of body which receive messages from co-ordinators and produce particular responses.

Example: There are two types of effectors:

(i) **Effectors in nervous coordination:** In nervous coordination, neurons carry messages from coordinators to muscles and glands, which act as effectors.

(ii) **Effectors in chemical coordination:** In chemical coordination, particular hormones carry messages from coordinators to particular target tissues, which act as effectors. For some hormones, nephrons act as effectors. Similarly, bones and liver act as effectors for many hormones.

9. **What is meant by response?**

(LHR-I/II, FSD-I, DGK-I, SWL-I, MUL-II)

Ans: Response: On receiving the message from coordinators, the effector performs

action. This action is called response.

10. Differentiate between stimuli and response.

(LHR-I/II, FSD-I, DGK-I, SWL-I, MUL-II)

Ans: Stimulus: Any change in external or internal environment which produces a response in organism is called stimulus. Its plural is stimuli.

Examples: The examples of stimuli are heat, cold, pressure, sound waves, presence of chemicals and microbial infections.

11. Define Receptors and Give At least two examples. (LHR-I/II, FSD-I, DGK-I, SWL-I, MUL-II)

Ans: Receptors: The organs, tissues or cells which are specially built to detect particular type of stimuli are called receptors.

Example: Sound waves are detected by ears, light is detected by eyes and chemicals in air are detected by nose and so on.

Lecture Number 7: (PTB Pg # 34 to 41)

12.2

Human Nervous System

Nerve Cell or Neuron, Divisions of the Nervous System, Brain, Spinal Cord, Peripheral Nervous System, Reflex Action

- Which one controls feelings such as rage, pain, pleasure and sorrow?**
(LHR-II, GUJ-I/II, FSD-I, MUL-I/II, SGD-I/II, DGK-II, SWL-II)
(A) Cerebellum (B) Medulla (C) Hypothalamus (D) Midbrain
- The myelin Sheath is formed by:** (LHR-I/II, GUJ-I/II, FSD-I/II, MUL-I, SGD-II, DGK-I, SWL-I)
(A) Nodes of Ranvier (B) Axons
(C) Dendrites (D) Schwann cells
- The unit of the nervous system is:** (FSD-I/II, MUL-I/II, SGD-I/II, DGK-II, SWL-II)
(A) cell body (B) neuron (C) axon (D) nephron
- Types of neurons according to their work are:** (LHR-I/II, FSD-I, DGK-I, SWL-I, MUL-II)
(A) Three (B) Four (C) Five (D) Two
- The part of brain responsible for muscle movements:** (LHR-I/II, FSD-I, DGK-I, SWL-I, MUL-II)
(A) Cerebrum (B) Midbrain
(C) Medulla oblongata (D) Cerebellum
- Which one is the largest area of brain?** (GUJ-I/II, MUL-I/II, SGD-I/II, DGK-II, SWL-II)
(A) Hind brain (B) mid brain (C) Forebrain (D) Super brain
- Number of pairs of spinal nerves arising along apinal cord of human is:** (LHR-I/II, FSD-I, DGK-I, SWL-I, MUL-II)
(A) 27 (B) 29 (C) 31 (D) 33
- Temporal lobe is concerned with:** (LHR-I/II, GUJ-I/II, FSD-I/II, MUL-I, SGD-II, DGK-I, SWL-I)
(A) Hearing and smell (B) Control of skeletal muscles
(C) Visual information (D) Both A & B
- Part of brain associated with pain perception and conciousness is called.** (LHR-II, GUJ-I/II, FSD-I, MUL-I/II, SGD-I/II, DGK-II, SWL-II)
(A) cerebrum (B) thalamus (C) hypothalamus (D) forebrain
- Spinal cord is the continuation of:** (LHR-I/II, GUJ-I/II, FSD-I/II, MUL-I, SGD-II, DGK-I, SWL-I)
(A) Medulla Oblongata (B) Frontal lobe
(C) Blind spot (D) Retina

11. No. of pairs of cranial nerves in humans are: (GUJ-I/II,,MUL-I/II,SGD-I/II,DGK-II,SWL-II)
 (A) 10 (B) 12 (C) 14 (D) 16
12. Central nervous system consists of: (LHR-I/II,MUL-I,SGD-I,DGK-I/II,SWL-I/II)
 (A) spinal cord (B) brain (C) both A and B (D) hormones
13. Pons is present on the top of: (LHR-II,GUJ-I/II,FSD-I,MUL-I/II,SGD-I/II,DGK-II,SWL-II)
 (A) cerebrum (B) thalamus (C) cerebellum (D) medulla
14. The neurons having one dendrite and one axon are called: (LHR-I/II,MUL-I,SGD-I,DGK-I/II,SWL-I/II)
 (A) motor (B) inter (C) sensory (D) mixed
15. The union of several axons that enveloped by a covering made of lipids is called: (LHR-I/II,MUL-I,SGD-I,DGK-I/II,SWL-I/II)
 (A) Meninges (B) Nerve (C) Cerebrum (D) Dendrites
16. The myelin sheath is formed by: (FSD-I/II,MUL-I/II,SGD-I/II,DGK-II,SWL-II)
 (A) Dendrites (B) Axons (C) Nones of Raniver (D) Schwann Cell
17. The largest part of Human brain is: (LHR-I/II,MUL-I,SGD-I,DGK-I/II,SWL-I/II)
 (A) Forebrain (B) Midbrain (C) Hindbrain (D) Medulla
18. Part of neuron which takes impulses towards cell body are called: (LHR-I/II,MUL-I,SGD-I,DGK-I/II,SWL-I/II)
 (A) Dendrites (B) Axons (C) Ganglia (D) Myelin sheath
19. The length of spinal cord is approximately _____ centimeter. (LHR-I/II,GUJ-I/II,FSD-I/II,MUL-I,SGD-II,DGK-I,SWL-I)
 (A) 10 (B) 20 (C) 30 (D) 40
20. The part of Hindbrain that co-ordinates muscle movements is: (FSD-I/II,MUL-I/II,SGD-I/II,DGK-II,SWL-I)
 (A) Medulla Oblongata (B) Pons
 (C) Cerebrum (D) Cerebellum
21. Myelin sheath is formed by: (LHR-II,GUJ-I/II,FSD-I,MUL-I/II,SGD-I/II,DGK-II,SWL-I)
 (A) Cell bodies (B) Axons (C) Schwann (D) Dendrites

Answers

| | | | |
|---------------------|---------------------------|---------------|--------------------------|
| 1. (C) Hypothalamus | 2. (D) Schwann cells | 3. (B) neuron | 4. (A) Three |
| 5. (A) Cerebrum | 6. (C) Forebrain | 7. (C) 31 | 8. (A) Hearing and smell |
| 9. (B) thalamus | 10. (A) Medulla Oblongata | 11. (B) 12 | 12. (C) both A and B |
| 13. (D) medulla | 14. (C) sensory | 15. (B) Nerve | 16. (D) Schwann Cell |
| 17. (A) Forebrain | 18. (A) Dendrites | 19. (D) 40 | 20. (D) Cerebellum |
| 21. (C) Schwann | | | |

All Punjab Past Board
PapersShort Questions
(Subjective Type)

2014 - 2020

1. What is nerve impulse?

(LHR-I/II, GUJ-I/II, FSD-I/II, MUL-I, SGD-II, DGK-I, SWL-I)

Ans: Nerve Impulse: A nerve impulse is a wave of electrochemical changes that travels along the length of neurons is called nerve impulse.

2. Write the function of dendrites and axons.

(LHR-II, GUJ-I/II, MUL-I/II, SGD-I/II, DGK-II)

Ans: Dendrites: Dendrites conduct impulses towards cell body of a neuron.

Axons: Axons conduct impulses away from cell body of a neuron.

3. What is meant by myelin sheath?

(FSD-I/II, MUL-I/II, SGD-I/II, DGK-II, SWL-II)

Ans: Myelin Sheath: Schwann cells are special neuroglial cells located at regular intervals along axons. In some neurons, Schwann cells secrete a fatty layer called myelin sheath, over axons.

4. What is meant by saltatory impulses?

(LHR-I/II, GUJ-I/II, FSD-I/II, MUL-I, SGD-II, DGK-I, SWL-I)

Ans: Saltatory Impulses: Impulses jump over the area of myelin going from node to node. Such impulses are called saltatory (jumping) impulses. This increases the speed of nerve impulse.

5. Write down the name of types of neurons according to their functions.

(FSD-I/II, MUL-I/II, SGD-I/II, DGK-II, SWL-II)

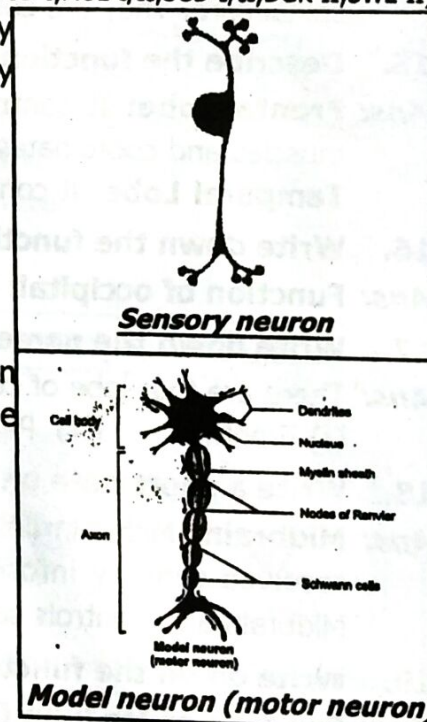
Ans: Neurons are of three types:

(i) sensory neurons (ii) interneurons (iii) motor neurons

6. What is the difference between sensory and motor neurons?

(LHR-II, GUJ-I/II, FSD-I, MUL-I/II, SGD-I/II, DGK-II, SWL-II)

Ans: Sensory Neurons: Sensory neurons conduct sensory information from receptors towards the CNS. Sensory neurons have one dendrite and one axon.



Motor Neurons: Motor neurons carry information from interneurons to muscle or glands. They have many dendrites but only one axon.

7. What is ganglion.

(LHR-I/II, GUJ-I/II, FSD-I/II, MUL-I, SGD-II, DGK-I, SWL-I)

Ans: Ganglion: The aggregation of the cell bodies of neurons is called ganglion.

8. What are meninges? Write down their function.

(LHR-I/II, FSD-I, DGK-I, SWL-I, MUL-II)

Ans: Meninges: Brain is covered by three layers called meninges.

Function: Meninges protect brain and also provide nutrients and oxygen to brain tissue through their capillaries.

9. **How brain is protected?** (LHR-II, GUJ-I/II, FSD-I, MUL-I/II, SGD-I/II, DGK-II, SWL-II)
Ans: Brain Protection: Cranium and meninges protect brain and provide food and oxygen to brain by their capillaries.
10. **Write down the function of Thalamus.** (FSD-I/II, MUL-I/II, SGD-I/II, DGK-II, SWL-II)
Ans: Thalamus: It serves as a relay centre between various parts of brain and spinal cord. It also receives and modifies sensory impulses before they travel to cerebrum. Thalamus is also involved in pain perception and consciousness.
11. **Where is hypothalamus located? Write about its two functions.** (LHR-II, GUJ-I/II, FSD-I, MUL-I/II, SGD-I/II, DGK-II, SWL-II)
Ans: Location of Hypothalamus: Hypothalamus lies above midbrain and just below thalamus.
Function: It links nervous system and endocrine system. It controls the secretions of pituitary gland. It also controls feelings such as range, pain, pleasure and sorrow.
12. **What is meant by Hippocampus?** (FSD-I/II, MUL-I/II, SGD-I/II, DGK-II, SWL-II)
Ans: Hippocampus: Hippocampus is a structure that is deep in the cerebrum. It functions for the formation of new memories. People with a damaged hippocampus can not remember things that occurred after the damage but can remember things that had occurred before damage.
13. **What is Grey Matter?** (LHR-II, GUJ-I/II, FSD-I, MUL-I/II, SGD-I/II, DGK-II, SWL-II)
Ans: Grey Matter: The central region is butterfly shaped that surrounds the central canal. It is made of grey matter (containing neuron cell bodies).
14. **What do you meant by brain stem?** (LHR-I/II, GUJ-I/II, FSD-I/II, MUL-I, SGD-II, DGK-I, SWL-I)
Ans: Brain Stem: The medulla oblongata, pons and midbrain connect the rest of brain to spinal cord. They are collectively referred to as brain stem.
15. **Describe the functions of frontal and temporal lobe.** (FSD-I/II, MUL-I/II, DGK-II)
Ans: Frontal lobe: It controls motor functions, permits conscious control of skeletal muscles and coordinates movements involved in speech.
Temporal Lobe: It concerned with hearing and smell.
16. **Write down the function of occipital lobe.** (LHR-I/II, MUL-I, SGD-I, DGK-I/II, SWL-I/II)
Ans: Function of occipital: Occipital lobe receives and analyzes visual information.
17. **Write down the name of lobe of cerebral cortex.** (LHR-I/II, FSD-I, DGK-I, SWL-I, MUL-II)
Ans: There are four lobe of cerebral cortex:
(i) Frontal (ii) Parietal (iii) Occipital (iv) Temporal
18. **Write a short note on midbrain.** (GUJ-I/II, MUL-I/II, SGD-I/II, DGK-II, SWL-II)
Ans: Midbrain: Midbrain lies between hindbrain and forebrain and connects the two. It receives sensory information and sends it to the appropriate part of forebrain. Midbrain also controls some auditory reflexes and posture.
19. **Write down the function of medulla oblongata.** (LHR-I/II, FSD-I, DGK-I, SWL-I, MUL-II)
Ans: Function of Medulla Oblongata: Medulla Oblongata lies on the top of spinal cord. It controls breathing, heart rate and blood pressure. It also controls many reflexes such as vomiting, coughing, sneezing etc. information that passes between spinal cord and the rest of brain pass through medulla.
20. **Write down the important functions of spinal cord.** (LHR-I/II, FSD-I, DGK-I, SWL-I)
Ans: Spinal cord performs two main functions:
1. It serves as a link between body parts and brain. Spinal cord transmits nerve

impulses from body parts to brain and from brain to body parts.

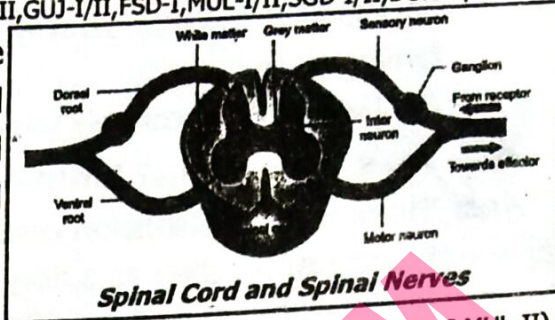
2. Spinal cord also acts as a coordinator, responsible for some simple reflexes.

21. What do you know about spinal cord? Write down its length.

(LHR-II, GUJ-I/II, FSD-I, MUL-I/II, SGD-I/II, DGK-II, SWL-II)

Ans: Spinal cord: Spinal cord is a tubular bundle of nerves. It starts from brain stem and extends to lower back. Like brain, spinal cord is also covered by meninges. The vertebral column surrounds and protect spinal cord.

Length: The length of spinal cord is 40cm



22. What is meant by somatic nervous system?

(LHR-I/II, FSD-I, DGK-I, SWL-I, MUL-II)

Ans: Somatic Nervous System: Somatic nervous system is responsible for the conscious and voluntary actions. It includes all of the motor neurons that conduct impulses from CNS to skeletal muscles.

23. What do you meant by Autonomic system? (GUJ-I/II, MUL-I/II, SGD-I/II, DGK-II, SWL-II)

Ans: Autonomic System: It is responsible for the activities which are not under conscious control. It consists of motor neurons that send impulses to cardiac muscles, smooth muscle and glands. Autonomic nervous system comprises of sympathetic system and parasympathetic system.

24. Differentiate between sympathetic and parasympathetic system.

(LHR-II, GUJ-I/II, FSD-I, MUL-I/II, SGD-I/II, DGK-II, SWL-II)

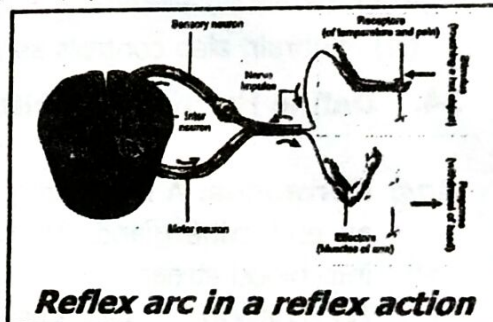
Ans: Difference between sympathetic and parasympathetic system:

| Sympathetic System | Parasympathetic System |
|--|---|
| Sympathetic nervous system prepares body to deal with emergency situations. This is often called the "fight or flight" response. During an emergency situation, system takes necessary actions. Example; It dilates pupils, accelerates heartbeat, increase breathing rate and inhibits digestion. | When stress ends, the parasympathetic nervous system takes action and normalizes all the functions. it causes pupils to contract, promotes digestion, and slows the rate of heartbeat and breathing rate. |

25. Define reflex action and reflex arc. (LHR-I/II, GUJ-I/II, FSD-I/II, MUL-I, SGD-II, DGK-I, SWL-I)

Ans: Reflex Action: The involuntary and immediate response to a stimulus is called reflex action.

Reflex Arc: The nerve pathway over which the nerve impulses travel in a reflex action is called reflex arc.



Reflex arc in a reflex action

26. Give function of frontal lobe.

(LHR-II, GUJ-I/II, FSD-I, MUL-I/II, SGD-I/II, DGK-II, SWL-II)

Ans: Frontal lobe: It controls motor functions, permits conscious control of skeletal muscles and coordinates movements involved in speech.

27. What are two functions of meninges?

(LHR-I/II, MUL-I, SGD-I, DGK-I/II, SWL-I/II)

Ans: Functions of Meninges: Brain is covered by three layers called meninges. Meninges protect brain and also provide nutrients and oxygen to brain tissue through their capillaries.

28. Write the two functions of Midbrain.

(LHR-I/II, FSD-I, DGK-I, SWL-I, MUL-II)

Ans: Midbrain: Midbrain lies between hindbrain and forebrain and connects the two.

Functions:

(i) Midbrain receives sensory information and sends it to the appropriate part of forebrain.

(ii) Midbrain also controls some auditory reflexes and posture.

29. What is Thalamus? Write its function.

(FSD-I/II, MUL-I/II, SGD-I/II, DGK-II, SWL-II)

Ans: Thalamus lies just below cerebrum.

Function: It serves as a relay centre between various parts of brain and spinal cord. It also receives and modifies sensory impulses before they travel to cerebrum. Thalamus is also involved in pain perception and consciousness.

30. Define nerve.

(LHR-II, GUJ-I/II, FSD-I, MUL-I/II, SGD-I/II, DGK-II, SWL-II)

Ans: Nerve: A nerve is a group of several axons that are enveloped by a covering of lipid.

31. What are the functions of pons?

(LHR-I/II, GUJ-I/II, FSD-I/II, MUL-I, SGD-II, DGK-I, SWL-I)

Ans: Pons: Pons is present on the top of medulla.

Function:

(i) It assists medulla in controlling breathing.

(ii) It also serves as a connection between cerebellum and spinal cord.

32. Differentiate nerve and ganglion.

(LHR-II, GUJ-I/II, FSD-I, MUL-I/II, SGD-I/II, DGK-II, SWL-II)

Ans: Difference between nerve and ganglion:

| Nerve | Ganglion |
|---|---|
| A nerve is a group of several axons that are enveloped by a covering made of lipid. | In certain parts of body, the cell bodies of many neurons form a group enveloped by a membrane called ganglion. |

33. What is the function of Mid-Brain?

(GUJ-I/II, MUL-I/II, SGD-I/II, DGK-II, SWL-II)

Ans: Midbrain: Midbrain lies between hindbrain and forebrain and connects the two.

Functions:

(i) Midbrain receives sensory information and sends it to the appropriate part of forebrain.

(ii) Midbrain also controls some auditory reflexes and posture.

34. Define Hormones. Write the names of two Hormones also.

(LHR-II, GUJ-I/II, FSD-I, MUL-I/II, SGD-I/II, DGK-II, SWL-II)

Ans: Hormones: A hormone is a specific messenger molecule synthesized and secreted by an endocrine gland. These glands are ductless and release their secretions directly into blood stream.

(i) Oxytocin (ii) Vasopressin

35. Define Nerve and write the name of its two types.

(LHR-I/II, FSD-I, DGK-I, SWL-I, MUL-II)

Ans: Nerve: A nerve means the union of several axons that are enveloped by a covering made of lipids. Based on the property of axons, the nerves are classified into three types.

(i) Sensory nerves contain the axons of sensory neurons only.

(ii) Motor nerves contain the axons of motor neurons only.

(iii) Mixed nerves contain the axons of both i.e. sensory and motor neurons.

Lecture Number 8: (PTB Pg # 47 to 51)

Endocrine System

12.4

Important Endocrine Glands (complete), Feedback Mechanism

- When the human body has low amount of water, then pituitary gland secretes:
(A) Vasopressin (B) Insulin (C) TSH (D) Oxytocin
(LHR-II, GUJ-I/II, FSD-I, MUL-I/II, SGD-I/II, DGK-II, SWL-II)
- Disease caused by deficiency of iodine in food is called:
(A) diabetes mellitus (B) hyperthyroidism (C) dwarfism (D) goitre
(FSD-I/II, MUL-I/II, SGD-I/II, DGK-II, SWL-II)
- Chemical coordination brought about by:
(A) nervous system (B) endocrine system
(C) autonomic nervous system (D) peripheral nervous system
(LHR-I/II, MUL-I, SGD-I, DGK-I/II, SWL-I/II)
- Where are insulin and glucagon produced?
(A) Hypothalamus (B) Anterior pituitary
(C) Liver (D) Pancreas
(LHR-I/II, FSD-I, DGK-I, SWL-I, MUL-II)
- The special glands present in the walls of auditory canal which produce.
(A) auditory fluid (B) wax (C) blood (D) nerve impulse
(LHR-II, GUJ-I/II, FSD-I, MUL-I/II, SGD-I/II, DGK-II, SWL-II)
- The name of gland present below the human neck region is:
(A) Parathyroid (B) Thyroid (C) Adrenal gland (D) pancreas
(LHR-I/II, GUJ-I/II, FSD-I/II, MUL-I, SGD-II, DGK-I, SWL-I)
- Two Glands are situated above kidneys:
(A) Adrenal (B) Parathyroid (C) Thyroid (D) Pancreas
(LHR-I/II, MUL-I, SGD-I, DGK-I/II, SWL-I/II)
- The following are all hormones except:
(A) glucagon (B) pepsinogen (C) thyroxin (D) insulin
(GUJ-I/II, MUL-I/II, SGD-I/II, DGK-II, SWL-II)
- Which hormone develops the male secondary sex characters?
(A) insulin (B) testosterone (C) progesterone (D) estrogen
(LHR-I/II, FSD-I, DGK-I, SWL-I, MUL-II)
- Which hormone falls the blood glucose concentration?
(A) Glucagon (B) Insulin (C) Thyroxin (D) Oxytocin
(LHR-II, GUJ-I/II, FSD-I, MUL-I/II, SGD-I/II, DGK-II, SWL-II)
- Which hormone stimulates the contraction of uterus walls?
(A) Calcitonin (B) Oxytocin (C) Parathormone (D) Thyroxin
(LHR-I/II, FSD-I, DGK-I, SWL-I, MUL-II)
- The hormone that increases the blood glucose concentration:
(A) Glucagon (B) Insulin (C) Parathormone (D) calcitonin
(LHR-II, GUJ-I/II, FSD-I, MUL-I/II, SGD-I/II, DGK-II, SWL-II)

Answers

| | | | |
|---------------------|-----------------|-------------------------|-------------------|
| 1. (A) Vasopressin | 2. (D) goitre | 3. (B) endocrine system | 4. (D) Pancreas |
| 5. (B) wax | 6. (B) Thyroid | 7. (A) Adrenal | 8. (B) pepsinogen |
| 9. (B) testosterone | 10. (B) Insulin | 11. (B) Oxytocin | 12. (A) Glucagon |

All Punjab Past Board Papers

Short Questions
(Subjective Type)

2014 - 2020

1. Define Endocrine System.

(LHR-I/II, GUJ-I/II, FSD-I/II, MUL-I, SGD-II, DGK-I, SWL-II)

Ans: Many glands in our body are endocrine. Such glands do not have ducts for releasing secretions. The activities such as growth, reproduction, maintenance of glucose concentration in blood, reabsorption of water in kidneys etc. need to be regulated.

2. Name the hormones secreted by posterior lobe of pituitary gland.

(LHR-II, GUJ-I/II, FSD-I, MUL-I/II, SGD-I/II, DGK-II, SWL-II)

Ans: Two hormones are secreted and stored by posterior lobe of pituitary gland. These are oxytocin and vasopressin. These hormones are produced by hypothalamus which is a part of brain.

3. Why iodine is necessary for us?

(FSD-I/II, MUL-I/II, SGD-I/II, DGK-II, SWL-II)

Ans: Iodine is required for the production of thyroxine hormone. If a person lacks iodine in diet, thyroid gland cannot make its hormone. In this condition, thyroid gland enlarges. This disorder is called goitre.

4. What do you mean by goiter?

(LHR-I/II, FSD-I, DGK-I, SWL-I, MUL-II)

Ans: Goitre: Iodine is required for the production of thyroxine hormone. If a person lacks iodine in diet, thyroid gland cannot make its hormone. In this condition, thyroid gland enlarges. This disorder is called goitre.

5. Write down the name of two hormones produced by thyroid gland.

(LHR-II, GUJ-I/II, FSD-I, MUL-I/II, SGD-I/II, DGK-II, SWL-II)

Ans: (i) Thyroid (ii) calcitonin

6. Write down the function of parathyroid glands.

(LHR-I/II, FSD-I, DGK-I, SWL-I, MUL-II)

Ans: Function of Parathyroid Gland: These are four glands situated on the posterior side of thyroid gland. They produce a hormone known as parathormone. It increases the level of calcium ions in blood.

7. What is function of parathormone?

(LHR-II, GUJ-I/II, FSD-I, MUL-I/II, SGD-I/II, DGK-II, SWL-II)

Ans: Function of Parathormone: Parathormone increases the level of calcium ions in blood. When there is increased production of parathormone, more than normal calcium salts are absorbed from the bones and added to blood. Consequently the bones become brittle. When there is deficiency in the production of parathormone, blood calcium level falls. It leads to tetany, which affects the functioning of muscles.

8. Write down the symptoms and causes of tetany.

(LHR-I/II, FSD-I, DGK-I, SWL-I, MUL-II)

Ans: Tetany: Tetany is marked by sharp flexion of the wrist and ankle joints, muscle twitching, cramps and convulsions.

Causes: It is due to decreased blood calcium level which makes the nerves and muscles more excitable.

Symptoms: If there is deficiency in the production of parathormone, blood calcium level falls. It leads to tetany, which affects the functioning of muscles.

9. Write down the causes of dwarfism.

(LHR-II, GUJ-I/II, FSD-I, MUL-I/II, SGD-I/II, DGK-II, SWL-II)

Ans: Somatotrophin is a growth hormone. It promotes the growth of body. If the production of this hormone is diminished during growing age, the rate of growth decreases. This condition is called dwarfism.

10. Write two functions of oxytocin?

(GUJ-I/II, MUL-I/II, SGD-I/II, DGK-II, SWL-II)

Ans: Oxytocin: Hormone is secreted by posterior lobe of pituitary gland.

Two functions of Oxytocin:

1. It stimulates the contraction of uterus walls in mothers for child birth.
2. This hormone is necessary for the ejection of milk from breast.

11. Write down the functions of Insulin and glucagon hormones.

(LHR-I/II, FSD-I, DGK-I, SWL-I, MUL-II)

Ans: Function of Insulin: Insulin influences the liver to take excess glucose from blood and so the blood glucose concentration falls.

Function of Glucagon: Glucagon influences the liver to release glucose in blood and so the blood glucose concentration rises.

12. Define feedback mechanism.

(LHR-I/II, FSD-I, DGK-I, SWL-I, MUL-II)

Ans: Feedback mechanism means the regulation of a process by the output of the same process.

13. What is meant by positive feedback mechanism? (SWL-GII, MTN-GII, FSD-GI, BWP-GI)

Ans: In positive feedback, the changes resulting from a process increase the rate of process. For example; suckling action of an infant stimulates the production of a hormone in mother. This hormone works for the production of milk. More suckling leads to more hormone, which in turn leads to more milk production.

14. Define the terms hormone and endocrine system. (LHR-I/II, FSD-I, DGK-I, SWL-I, MUL-II)

Ans: Hormone: A substance that is secreted by an endocrine gland directly into blood and that produces a specific effect on a particular tissue is called hormone.

Endocrine system: The activities such as growth, reproduction, maintenance of glucose concentration in blood, reabsorption of water in kidneys etc. need to be regulated. The system that performs this job is called endocrine system.

15. Differentiate between Exocrine Glands and Endocrine. (FSD-I, DGK-I, SWL-I, MUL-II)

Ans: Difference between Exocrine Glands and Endocrine:

| Exocrine Glands | Endocrine Glands |
|---|---|
| Many glands in our body are exocrine. Such glands have ducts for releasing their secretions e.g. digestive glands, skin glands etc. | Endocrine glands are ductless and release their secretions (hormones) directly into bloodstream. Blood carries the hormones to target organs or tissues, upon which they act. |

16. Compare the functions of Hormones Insulin and Glucagon.

(LHR-II, GUJ-I/II, FSD-I, MUL-I/II, SGD-I/II, DGK-II, SWL-II)

Ans: Function of Insulin: Insulin influences the liver to take excess glucose from blood and so the blood glucose concentration falls.

Function of Glucagon: Glucagon influences the liver to release glucose in blood and so the blood glucose concentration rises.

17. Name the two hormone found in ovaries.

(LHR-I/II, MUL-I, SGD-I, DGK-I/II, SWL-I/II)

Ans: Hormone found in ovaries

- (i) estrogen (ii) progesterone

18. What is meant by endocrine system?

(FSD-I/II, MUL-I/II, SGD-I/II, DGK-II, SWL-II)

Ans: Endocrine system: The activities such as growth, reproduction, maintenance of glucose concentration in blood, reabsorption of water in kidneys etc. need to be regulated. The system that performs this job is called endocrine system.

19. Define Exocrine Glands?

(LHR-I/II, MUL-I, SGD-I, DGK-I/II, SWL-I/II)

Ans: Exocrine Glands: Many glands in our body are exocrine. Such glands have ducts for releasing their secretions e.g. digestive glands, skin glands etc.

Home Work: Syllabus

Exercise

Questions: Multiple Choice Questions (1, 4, 6 - 10) (PTB: Pg # 53)

Home Work:

Short Questions (1-5,8), Understanding the Concepts (1-3,9-11) (PTB: Pg # 54)

Multiple Choice Questions (MCQ's)

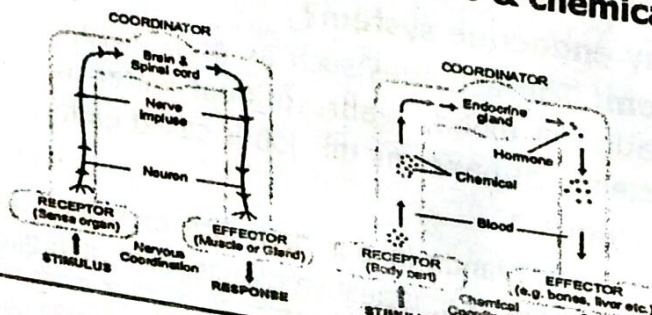
- (1) Processes that carry nerve impulses away from the cell body are called:
(a) Axons (b) Dendrites (c) Synapses (d) Myelin sheath
- (4) The part of the brain responsible for muscle movement, interpretation of the senses and the memory is the:
(a) Pons (b) Medulla oblongata
(c) Cerebrum (d) Cerebellum
- (6) The myelin sheath is formed by which wrap around the axons of some neurons:
(a) Nodes of Ranvier (b) Axons (c) Dendrites (d) Schwann cells
- (7) This is NOT a part of the hindbrain:
(a) Pons (b) Medulla oblongata
(c) Cerebrum (d) Cerebellum
- (8) If you look at an intact human brain, what you see the most is a large highly convoluted outer surface. This is the:
(a) Cerebrum (b) Cerebellum
(c) Pons (d) Medulla oblongata
- (9) Insulin and glucagon are produced in the:
(a) Hypothalamus (b) Anterior pituitary
(c) Liver (d) Pancreas
- (10) All of these are hormones except:
(a) Insulin (b) Thyroxine (c) Glucagon (d) Pepsinogen

| | | | | | | | |
|---|--------------|---|--------------|----|-------------------|---|--------------|
| 1 | (a) Axons | 4 | (c) Cerebrum | 6 | (d) Schwann cells | 7 | (c) Cerebrum |
| 8 | (a) Cerebrum | 9 | (d) Pancreas | 10 | (d) Pepsinogen | | |

Answers

Q.1: Identify the two types of coordination in living organisms.
Ans. There are two types of coordination in organisms. These are nervous coordination and chemical coordination.

Q.2: Differentiate between the modes of nervous & chemical coordination.
Ans.



Q.3: What are the main components of coordination?

Ans. These components include stimulus, receptors, coordinator, effectors and response.

Q.4: Define reflex action and reflex arc.

Ans. An involuntary, immediate and automatic response to a stimulus is called reflex action. Reflex arc is the nerve pathway over which the nerve impulses travel in a reflex action.

Q.5: Trace the path of nerve impulse in case of reflex action.

Ans. A sensory neuron receives the stimulus in the form of nerve impulse. This nerve impulse is carried to interneuron of spinal cord. The impulse is passed to motor neuron from interneuron.

Q.8: Define the terms; hormone and endocrine system.

Ans. A substance that is secreted by an endocrine gland directly into blood and produces a specific effect on a particular tissue is called hormone. A system of ductless glands that produce and secrete hormones is called endocrine system.

Understanding the Concepts

Q.1: Explain what can happen if there is no coordination in the activities of organisms?

Ans. For answer see Page # 85 in Al-Ghazali Rehnuma Notes.

Q.2: Explain the location and function of these parts of brain, cerebrum, cerebellum, pituitary glands, thalamus, hypothalamus, medulla oblongata.

Ans. For answer see Page # 58 in Al-Ghazali Rehnuma Notes.

Q.3: Define neuron and describe the structure of a general neuron.

Ans. For answer see Page # 56 in Al-Ghazali Rehnuma Notes.

Q.9: Outline the major glands of the endocrine system (pituitary, thyroid, pancreas, adrenal, glands), with name of their hormones and their functions.

Ans. For answer see Page # 74 to 79 in Al-Ghazali Rehnuma Notes.

Q.10: Describe negative feedback with reference to insulin and glucagon.

Ans. For answer see Page # 79 in Al-Ghazali Rehnuma Notes.

Q.11: Explain how adrenaline may be involved in exercise and emergency.

Ans. For answer see Page # 85 in Al-Ghazali Rehnuma Notes.

Note: These are long Questions. For answer consult P.T.B/Al-Ghazali Rahnuma Notes.

Chapter Number
13**Support and Movement**All Punjab Past Board Papers
2014 - 2020**Smart Syllabus**

(13.1) Human Skeleton, (13.1.1) Role of Skeletal System, (13.1.1) Bone and Cartilage, (13.1.3) Components of Human Skeleton, Types of Joints
(13.2.1) Roles of Tendons and Ligaments, (13.3) Muscles and Movement.

(PTB: Pg # 57 - 64)

Class Work:

Questions: Multiple Choice Questions (1-2,4-10) (PTB: Pg # 66 - 67)

Home Work:

Short Questions (1 - 4), Understanding the Concepts (1 - 4) (PTB: Pg # 67)

Lecture Number 9: (PTB Pg # 57 to 61)**13.1****Human Skeleton**

Role of Skeletal System, Bone and Cartilage,
Components of Human Skeleton

All Punjab Past Board
Papers
MCQ's
(Multiple Choice Questions)
2014 - 2020

- An adult person skeleton has hard bones:** (LHR-I/II, FSD-I, DGK-I, SWL-I, MUL-II)
(A) 406 (B) 306 (C) 206 (D) 106
- All these are the parts of Axial Skeleton of humans except:** (FSD-I/II, MUL-I/II, SGD-I/II, DGK-II, SWL-I)
(A) Ribs (B) Sternum (C) Shoulder girdle (D) vertebral column
- The cells of cartilage are called:** (LHR-II, GUJ-I/II, FSD-I, MUL-I/II, SGD-I/II, DGK-II, SWL-I)
(A) Chondrocytes (B) Osteocytes (C) Leucocytes (D) Erthrocytes
- The skeleton found outside of the body is called:** (LHR-I/II, FSD-I, DGK-I, SWL-I, MUL-I)
(A) Endoskeleton (B) Exoskeleton (C) Hydro-skeleton (D) Fibro-skeleton
- Some bones prepare:** (LHR-I/II, MUL-I, SGD-I, DGK-I/II, SWL-I/I)
(A) Mucous (B) Blood cells (C) Oxygen (D) Hormones
- Cartilage is type of tissue:** (LHR-I/II, FSD-I, DGK-I, SWL-I, MUL-I)
(A) muscle (B) connective (C) smooth (D) cardiac
- The cartilage found in intervertebral discs is:** (LHR-I/II, FSD-I, DGK-I, SWL-I, MUL-II)
(A) Hyaline (B) Fibrous (C) Matrix (D) Elastic
- Gout generally attacks the _____ joints.** (LHR-I/II, FSD-I, DGK-I, SWL-I, MUL-II)
(A) toe (B) knee (C) hing (D) shoulder
- Pelvic gridle has _____ bones.** (LHR-II, GUJ-I/II, FSD-I, MUL-I/II, SGD-I/II, DGK-II, SWL-II)
(A) 2 (B) 3 (C) 4 (D) 5
- The hard outer layer of a bone is called:** (LHR-I/II, MUL-I, SGD-I, DGK-I/II, SWL-I/II)
(A) bone marrow (B) hyaline cartilage (C) spongy bone (D) compact bone
- Number of bones in skull is:** (LHR-I/II, FSD-I, DGK-I, SWL-I, MUL-II)
(A) 22 (B) 08 (C) 14 (D) 80

12. Mature bone cells are called (LHR-II, GUJ-I/II, FSD-I, MUL-I/II, SGD-I/II, DGK-II, SWL-II)
(A) compact bone (B) osteocytes (C) cartilage (D) fibrous cartilage
13. Number of cranial bones in human skeleton is: (LHR-I/II, FSD-I, DGK-I, SWL-I, MUL-II)
(A) 22 (B) 14 (C) 8 (D) 33
14. The number of bones in Appendicular Skeleton is: (LHR-I/II, FSD-I, DGK-I, SWL-I, MUL-II)
(A) 120 (B) 124 (C) 126 (D) 125
15. Which bone is part of appendicular skeleton: (LHR-I/II, FSD-I, DGK-I, SWL-I, MUL-II)
(A) Pectoral girdle (B) Vertebral column
(C) Skull (D) Sternum
16. Number of bones in both hand is: (LHR-II, GUJ-I/II, FSD-I, MUL-I/II, SGD-I/II, DGK-II, SWL-II)
(A) 33 (B) 80 (C) 54 (D) 126
17. The bone in which blood vessels are found: (LHR-I/II, FSD-I, DGK-I, SWL-I, MUL-II)
(A) Compact bone (B) Spongy bone (C) Bone marrow (D) None of these
18. It is the longest bone in our body: (LHR-II, GUJ-I/II, FSD-I, MUL-I/II, SGD-I/II, DGK-II, SWL-II)
(A) Stapes (B) Skull (C) Thigh Bone (D) Ulna
19. The number of pair of ribs in human are: (LHR-I/II, FSD-I, DGK-I, SWL-I, MUL-II)
(A) 9 (B) 10 (C) 11 (D) 12
20. The hardest connective tissue in the body is: (LHR-I/II, FSD-I, DGK-I, SWL-I, MUL-II)
(A) tendon (B) bone (C) cartilage (D) ligament
21. Which cartilage is found in epiglottis and pinna: (LHR-I/II, FSD-I, DGK-I, SWL-I, MUL-II)
(A) Hyaline (B) Elastic (C) Fibrous (D) Collagen
22. Human babies are born with about _____ soft bones. (LHR-I/II, MUL-I, SGD-I, DGK-I/II, SWL-I/II)
(A) 100 (B) 200 (C) 300 (D) 400
23. How many bones are organized into a longitudinal axis of human skeleton? (LHR-II, GUJ-I/II, FSD-I, MUL-I/II, SGD-I/II, DGK-II, SWL-II)
(A) 202 (B) 206 (C) 302 (D) 306
24. The skeleton of adult human has the number of hard bones: (LHR-I/II, MUL-I, SGD-I, DGK-I/II, SWL-I/II)
(A) 200 (B) 196 (C) 206 (D) 201
25. Cartilage and bone are types of _____ tissues of animals. (LHR-II, GUJ-I/II, FSD-I, MUL-I/II, SGD-I/II, DGK-II, SWL-II)
(A) Muscle (B) Connective (C) Smooth (D) Cardiac
26. In mammals the number of bones in lower jaw: (LHR-I/II, FSD-I, DGK-I, SWL-I, MUL-II)
(A) One bone (B) Two bone (C) Three bone (D) Four bone
27. Bone Marrow is found in: (LHR-I/II, MUL-I, SGD-I, DGK-I/II, SWL-I/II)
(A) Compact Bone (B) Spongy Bone (C) Osteocytes (D) Chondrocytes

Answers

| | | | |
|--------------------|------------------------|---------------------|--------------------|
| 1. (C) 206 | 2. (C) Shoulder girdle | 3. (A) Chondrocytes | 4. (B) Exoskeleton |
| 5. (B) Blood cells | 6. (B) connective | 7. (B) Fibrous | 8. (A) toe |
| 9. (A) 2 | 10. (D) compact bone | 11. (A) 22 | 12. (B) osteocytes |

| | | | |
|---------------------|--------------------|-------------------------|--------------|
| 13. (C) 8 | 14. (C) 126 | 15. (A) Pectoral girdle | 16. (C) 54 |
| 17. (B) Spongy bone | 18. (C) Thigh Bone | 19. (D) 12 | 20. (B) bone |
| 21. (B) Elastic | 22. (C) 300 | 23. (B) 206 | 24. (C) 206 |
| 25. (B) Connective | 26. (A) One bone | 27. (B) Spongy Bone | |

All Punjab Past Board Papers

Short Questions (Subjective Type)

2014 - 2020

1. **What is meant by movement? Describe its types.** (LHR-I/II, FSD-I, DGK-I, SWL-I, MUL-II)

Ans: Movement: "Movement" is a general term meaning the act of changing place or position by entire body or by its parts. There are two types of movement.

- i. Movements of body parts
- ii. Locomotion

Movement is act of changing place or position by entire body or by its parts.

Locomotion is the movement of an animal as a whole from one place to another.

2. **What do you know about locomotion?** (LHR-I/II, MUL-I, SGD-I, DGK-I/II, SWL-I/II)

Ans: Locomotion is the movement of an animal as a whole from one place to another.

3. **What is skeletal system? Write down its function.** (LHR-I/II, FSD-I, DGK-I, SWL-I, MUL-II)

Ans: Skeletal system or skeleton is defined as the framework of hard, articulate structures that provide physical support, attachment for skeletal muscles, and protection for the bodies of animals.

4. **Define endoskeleton and exoskeleton with example.**

(FSD-I/II, MUL-I/II, SGD-I/II, DGK-II, SWL-I)

Ans: Difference between endoskeleton and exoskeleton:

| Endoskeleton | Exoskeleton |
|--|---|
| The skeletal system of vertebrates e.g. human is on the inside of body and is called endoskeleton. | The skeletal system of some invertebrates is on the outside of the body and is called exoskeleton. e.g. arthropods. |

5. **Define cartilage and write names of its types.** (FSD-I/II, MUL-I/II, SGD-I/II, DGK-II, SWL-I)

Ans: Cartilage: Cartilage is a dense, clear blue-white firm connective tissue (but less strong than bone). The cells of cartilage are called chondrocytes.

Types: There are three types of cartilage.

- i. Hyaline cartilage
- ii. Elastic cartilage
- iii. Fibrous cartilage

6. **Differentiate between hyaline cartilage and fibrous cartilage.**

(LHR-II, GUJ-I/II, FSD-I, MUL-I/II, SGD-I/II, DGK-II, SWL-I)

Ans: Difference between Hyaline Cartilage and Fibrous Cartilage:

| Hyaline Cartilage | Fibrous Cartilage |
|--|--|
| Hyaline cartilage is strong yet flexible. It is found covering the ends of the long bones, in the nose, larynx, trachea and bronchial tubes. | Fibrous cartilage is very tough and less flexible due to large number of thick collagen fibres present in knitted form. It is found in intervertebral discs. |

7. **What is elastic cartilage?**

(FSD-I/II, MUL-I/II, SGD-I/II, DGK-II, SWL-I)

Ans: Elastic Cartilage: Elastic cartilage is similar in structure to hyaline cartilage. It is also quite strong but has elasticity due to a network of elastic fibres in addition to collagen fibres. It is found in epiglottis, pinna etc.

8. Define bone with example.

(LHR-II, GUJ-I/II, FSD-I, MUL-I/II, SGD-I/II, DGK-II, SWL-II)

Ans: Bone: Bone is the hardest connective tissue in body e.g. chest bone, ear bone etc. Bone moves, supports and protects the various organs of the body.

9. Write down the number of bones in human skeleton system.

(LHR-I/II, FSD-I, DGK-I, SWL-I, MUL-II)

Ans: Babies are born with about 300 soft bones. Some of these bones later fuse together, so that the adult skeleton has 206 hard bones.

10. Write down the two function of bones. (LHR-II, GUJ-I/II, FSD-I, MUL-I/II, SGD-I/II, SWL-II)

Ans: Function of Bones: Bone is the hardest connective tissue in body. Bones not only move, support and protect the various parts of body but also produce red and white blood cells and store minerals.

11. What is the difference between compact bone and spongy bone?

(LHR-I/II, FSD-I, DGK-I, SWL-I, MUL-II)

Ans: Compact Bone and Spongy Bone: The hard outer layer of a bone is called compact bone while the interior of bone is soft and porous. It is called spongy bone. Spongy bone contains blood vessels and bone marrow.

12. Differentiate between chondrocytes and osteocytes. (LHR-I/II, FSD-I, DGK-I, MUL-II)

Ans: Difference between chondrocytes and osteocytes:

| chondrocytes | osteocytes |
|---|--|
| The cells of cartilage are called chondrocytes. | The mature bone cells are called osteocytes. |

13. State appendicular skeleton. (LHR-II, GUJ-I/II, FSD-I, MUL-I/II, SGD-I/II, DGK-II, SWL-II)

Ans: Appendicular Skeleton: Appendicular skeleton is composed of 126 bones. Pectoral (shoulder) girdle is made of 4 bones. Arms have 6 bones. Both hands have 54 bones. Pelvic girdle (hips) has 2 bones. Legs have 6 bones. Both feet have 54 bones.

14. Write down the number of bones in pectoral girdle and pelvic girdle.

(LHR-II, GUJ-I/II, FSD-I, MUL-I/II, SGD-I/II, DGK-II, SWL-II)

Ans: Pectoral (shoulder) girdle is made of 4 bones. Pelvic girdle (hips) has 2 bones.

15. What two minerals are found in bones?

(LHR-I/II, FSD-I, DGK-I, SWL-I, MUL-II)

Ans: Following minerals are found in bones:

(I) Calcium (II) Phosphorus

16. Differentiate between bone and cartilage.

(LHR-I/II, MUL-I, SGD-I, DGK-I/II, SWL-I/II)

Ans: Difference between bone and cartilage:

| Bone | Cartilage |
|--|--|
| The bone is the hardest connective tissue in the body. | The cartilage is a denser, clear, blue white and firm connective tissue. |

17. Write down the difference between elastic cartilage and fibrous cartilage.

(LHR-II, GUJ-I/II, FSD-I, MUL-I/II, SGD-I/II, DGK-II, SWL-II)

Ans: Difference between Elastic Cartilage and Fibrous Cartilage:

| Elastic Cartilage | Fibrous Cartilage |
|--|--|
| It is similar in structure to hyaline cartilage. It is also quite strong. It has elasticity due to a network of elastic fibres in addition to collagen fibres. It is found in epiglottis, pinna etc. | Fibrous cartilage is very tough and less flexible due to large number of thick collagen fibres present in knitted form. It is found in intervertebral discs. |

18. What do you know about Andreas vesallius?

(LHR-I/II, FSD-I, DGK-I, SWL-I, MUL-II)

Ans: Andreas Vesallius is honoured for developing modern anatomical studies. Vesallius was born in brussels, belgium. He made many discoveries in anatomy, based on studies made by dissection of human dead bodies. His book contained the most accurate depictions of the whole skeleton and muscles of the human body.

19. Differentiate between movement and locomotion. (LHR-I/II, FSD-I, DGK-I, SWL-I, MUL-II)

Ans: Movement is act of changing place or position by entire body or by its parts.

Locomotion is the movement of an animal as a whole from one place to another.

20. Describe spongy Bone.

(LHR-II, GUJ-I/II, FSD-I, MUL-I/II, SGD-I/II, DGK-II, SWL-II)

Ans: Spongy Bone: Interior soft and porous layer of bone is called spongy bone.

21. What is exoskeleton? Give one example.

(LHR-I/II, FSD-I, DGK-I, SWL-I, MUL-II)

Ans: Exoskeleton: The skeletal system of some invertebrates arthropods, is on the outside of the body and it is called exoskeleton.

22. Which is longest bone in our body?

(LHR-I/II, FSD-I, DGK-I, SWL-I, MUL-II)

Ans: Longest Bone in Our Body: The longest bone in our body is "thigh".

23. What are Chondrocytes?

(LHR-I/II, MUL-I, SGD-I, DGK-I/II, SWL-I/II)

Ans: Chondrocytes: The cells of cartilage are called chondrocytes.

24. What is function of vertebral column?

(LHR-I/II, FSD-I, DGK-I, SWL-I, MUL-II)

Ans: Function of vertebral column: The vertebral column surrounds and protects spinal cord.

Lecture Number 10: (PTB Pg # 62 to 63)

13.2

Types of Joints

Roles of Tendons and Ligaments

All Punjab Past Board
Papers

MCQ's

(Multiple Choice Questions)

2014 - 2020

1. Tendons and ligaments are example of which tissues?

(GUJ-I/II, MUL-I/II, SGD-I/II, DGK-II, SWL-II)

(A) Connective (B) Muscular (C) Nerve (D) Epidermal

2. _____ prevent dislocation of bones at joints: (LHR-I/II, FSD-I, DGK-I, SWL-I, MUL-II)

(A) Collagen (B) Tendons (C) Ligaments (D) Cartilage

3. An example of immoveable joints is:

(LHR-I/II, FSD-I, DGK-I, SWL-I, MUL-II)

(A) Joint of skull (B) Hip joint (C) Shoulder joint (D) Elbow joint

4. Ball and Socket joints allow movement in:

(LHR-I/II, MUL-I, SGD-I, DGK-I/II, SWL-I/II)

(A) One direction (B) Two direction (C) All directions (D) No direction

Answers

| | | | | | | | |
|----|----------------|----|---------------|----|--------------------|----|--------------------|
| 1. | (A) Connective | 2. | (C) Ligaments | 3. | (A) Joint of skull | 4. | (C) All directions |
|----|----------------|----|---------------|----|--------------------|----|--------------------|

All Punjab Past Board
PapersShort Questions
(Subjective Type)

2014 - 2020

1. What is meant by joint? Write the names of its two types.

Ans: Joint: A joint is the location at which two or more bones make contact. They allow movement and provide mechanical support. Names of two types of joints are as under:

(LHR-I/II, FSD-I, DGK-I, SWL-I, MUL-II)

1. Immoveable (fixed) joints

2. Moveable joints

2. Write the names of types of joints.

(FSD-I/II, MUL-I/II, SGD-I/II, DGK-II, SWL-II)

Ans: The names of types of joints are as under:

(1) Immoveable fixed joints (2) Slightly moveable joints (3) Moveable joints
Moveable joints are further of two types:

(i) hinge joints

(ii) ball-and-socket joints.

3. Where immoveable joints found?

(LHR-II, GUJ-I/II, FSD-I, MUL-I/II, SGD-I/II, DGK-II, SWL-II)

Ans: Immoveable joints allow no movement e.g. the joints between the skull bones.

4. What do you mean by moveable joints? Give example.

Ans: Moveable joints They allow a variety of movements e.g. shoulder joint, hip joint, elbow joint, knee joint etc. There are many types of moveable joints in body. The main types are hinge joints (e.g. knee and elbow) and ball-and-socket joints (hip and shoulder).

(LHR-I/II, FSD-I, DGK-I, SWL-I, MUL-II)

5. What are the hinge joints? Write two examples.

(LHR-II, GUJ-I/II, MUL-I/II, SGD-I/II)

Ans: Hinge Joints: Hinge joints move back and forth like the hinge on a door and allow movements in one plane only.

Examples: The knee and elbow are hinge joints.

6. Differentiate between hinge joints and ball-and-socket joints.

(GUJ-I/II, MUL-I/II, SGD-I/II, DGK-II, SWL-II)

Ans: Hinge Joints: Hinge joints move back and forth like the hinge on a door and allow movements in one plane only. The knee and elbow are hinge joints.

Ball-and-Socket joints: Ball-and-Socket joints allow movement in all directions. The hip and shoulder joints are ball-and-socket joints.

7. What do you mean by slightly moveable joints?

(LHR-I/II, FSD-I, DGK-I, SWL-I, MUL-II)

Ans: Slightly moveable joints: Such joints allow slight movements e.g. joints between the vertebrae.

8. What do you mean by Ligaments?

(GUJ-I/II, MUL-I/II, SGD-I/II, DGK-II, SWL-II)

Ans: Ligaments: Ligaments are strong but flexible bands and join one bone to another at joints.

Function: They prevent dislocation of bones at joints.

9. What are tendons? Write down its function.

(LHR-I/II, FSD-I, DGK-I, SWL-I, MUL-II)

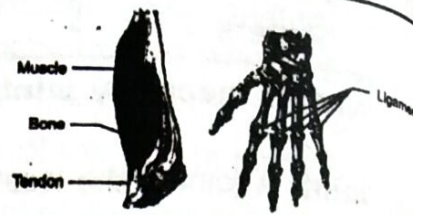
Ans: Tendons: Tendons and ligaments are bands of connective tissues (made of collagen).

Function: Tendons are tough bands and attach muscles to bones. When a muscle contracts tendon exerts a pulling force on the attached bone, which moves as a result.

10. What are tendons and ligaments?

Ans: Tendons: Tendons and ligaments are bands of connective tissues (made of collagen). Tendons are tough bands and attach muscles to bones. When a muscle contracts tendon exerts a pulling force on the attached bone, which moves as a result.

Ligaments: Ligaments are strong but flexible bands and join one bone to another at joints. They prevent dislocation of bones at joints.



Tendons and ligaments

11. Write two functions of human bone joints.

Ans: The location at which two or more bones make contact is called **joint**.

Functions: They allow movement and provide mechanical support.

Lecture Number 11: (PTB Pg # 63 to 65)

13.3

Muscles and Movement

All Punjab Past Board
Papers

MCQ's
(Multiple Choice Questions)

2014 - 2020

- Which point of attachment on bone is pulled when a muscle contracts?
(LHR-II, GUJ-I/II, FSD-I, MUL-I/II, SGD-I/II, DGK-II, SWL-I)
(A) origin (B) flexion (C) extension (D) insertion
- The movement of an animal as a whole from one place to another is called:
(LHR-I/II, MUL-I, SGD-I, DGK-I/II, SWL-I/II)
(A) Support (B) Movement (C) Locomotion (D) Growth
- The end of a skeletal muscle which is always attached with some immovable bone is called:
(GUJ-I/II, MUL-I/II, SGD-I/II, DGK-II, SWL-I)
(A) origin (B) Insertion (C) belly (D) static end

Answers

- | | | |
|----------------|-----------------|---------------|
| 1. (B) flexion | 2. (B) Movement | 3. (A) origin |
|----------------|-----------------|---------------|

All Punjab Past Board
Papers

Short Questions
(Subjective Type)

2014 - 2020

- Define origin of muscle.
(LHR-I/II, FSD-I, DGK-I, SWL-I, MUL-I)
Ans: Origin of Muscle: One end of a skeletal muscle is always attached with some immovable bone. This end of muscle is called the origin.
- What do you mean by muscle insertion?
(LHR-II, FSD-I, MUL-I/II, SGD-I/II, DGK-II, SWL-II)
Ans: Muscle Insertion: One end of a skeletal muscle is always attached with some moveable bone and is called the insertion.
- What is antagonism?
(GUJ-I/II, MUL-I/II, SGD-I/II, DGK-II, SWL-II)
Ans: Antagonism: Skeletal muscles are usually in pairs of antagonists. In an antagonist pair, both muscles do opposite jobs. When one muscle contracts the other relaxes and this phenomenon is known as antagonism.
- What is difference b/w origin and insertion?
(FSD-GI-II, MTN-GII, RWP-GI, FSD-GI, DGK-GI)
Ans: One end of a skeletal muscle is always attached with some immovable bone. The

end of muscle is called the origin. Other end of muscle is attached with a moveable bone and is called the insertion.

5. **Differentiate between flexor and extensor muscle.** (LHR-GII, BWP-GI, II, MTN-GI) (FSD-GI)

Ans: Flexor Muscle: When a muscle contracts and bends the joint, it is known as flexor.
Extensor Muscle: When a muscle contracts and straightens the joint, it is known as extensor muscle.

6. **Differentiate between flexion and extension.** (LHR-I/II, FSD-I, DGK-I, SWL-I, MUL-II)

Ans: Difference between flexion and extension:

| Flexion | Extension |
|--|---|
| When a muscle contracts and bends the joints, it is known as flexor muscle and the movement is called flexion. | When a muscle contracts and straightens the joint, it is known as extensor muscle and the movement is called extension. |

7. **What are biceps and triceps?**

(FSD-I/II, MUL-I/II, SGD-I/II, DGK-II, SWL-II)

Ans: Biceps: Biceps is a flexor muscle on the front of the upper arm bone.

Triceps: Triceps is an extensor muscle on the back of arm. Both these muscles have their origin at pectoral girdle and insertion at one of the two bones of forearm.



Home Work: Syllabus

Exercise

Class Work:

Questions: Multiple Choice Questions (1-2, 4-10) (PTB: Pg # 66 – 67)

Home Work:

Short Questions (1 – 4), Understanding the Concepts (1 – 4) (PTB: Pg # 67)

Multiple Choice Questions (MCQ's)

- (1) **Find the ball-and-socket joints.**

- (a) Joint in the finger bones (b) Joints of neck and skull bones
 (c) Joint at elbow (d) Joint at pelvic girdle and leg bones.

- (2) **All these are the parts of axial skeleton of humans except:**

- (a) Ribs (b) Sternum (c) Shoulder girdle (d) Vertebral column

- (4) **What is correct about tendons?**

- (a) Tendons are flexible and they join muscles with bones
 (b) Tendons are non -elastic and they join bones with bones
 (c) Tendons are non-elastic and they join muscles with bones
 (d) Tendons are flexible and they join muscles with muscles

- (5) **How many bones make our skull?**

- (a) 14 (b) 22 (c) 24 (d) 26

- (6) **What are the main components of a bone?**

- (a) Marrow, spongy bone, wax (b) Marrow, compact bone, wax
 (c) Compact bone and marrow (d) Compact bone, spongy bone, marrow

(7) What do some bones produce?

(a) Mucous

(b) Hormones

(c) Oxygen

(d) Blood cells

(8) How would you define skeletal system?

(a) All the bones in body

(b) All the muscles and tendons

(c) All the body's organs, both soft and hard tissues

(d) All the bones in body and the tissues that connect them

(9) Find the incorrect statement.

(a) Bone is where most blood cells are made

(b) Bone serves as a storehouse for various minerals

(c) Bone is a dry and non-living supporting structures.

(d) Bone protection & support the body and its organs.

(10) The purpose of rib cage is to:

(a) Protect the stomach

(b) Protect the spinal cord

(c) Protect the heart and lungs

(d) Provide an object to which the lungs can attach

Answers

| | | | | | | | |
|----|---|---|---------------------|---|--|---|---|
| 1 | (d) Joint at pelvic girdle and leg bones. | 2 | (c) Shoulder girdle | 4 | (c) Tendons are non-elastic and they join muscles with bones | 5 | (b) 22 |
| 6 | (d) Compact bone, spongy bone, marrow | 7 | (d) Blood cells | 8 | (d) All the bones in body and the tissues that connect them | 9 | (c) Bone is a dry and non-living supporting structures. |
| 10 | (c) Protect the heart and lungs | | | | | | |

Short Questions

Q.1: Differentiate b/w cartilage & bone.

Ans: Difference b/w cartilage & bone:

| Cartilage | Bone |
|--|--|
| Cartilage is a dense, blue -white, clear and firm connective tissue. It is less strong than bone. It covers the ends of bones at joints. No blood vessels, | The hardest connective tissue in body. It functions in movement, support and protection. Form RBC and white blood cells, |

Q.2: How would you differentiate between osteoporosis & arthritis?

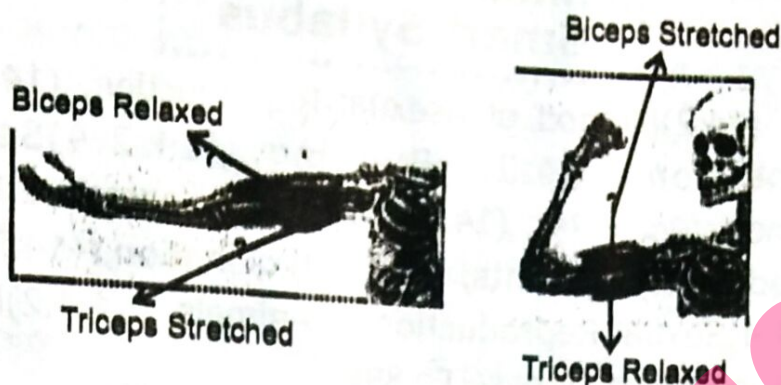
Ans: Osteoporosis is a disease of weakening or softening of bones. This disease is more common in old women. Arthritis is a disease of the inflammation in joints.

Q.3: What is the role of skeleton in support and movement?

Ans: Skelton provides support to body organs. For example vertebral column provides the main support to human body. Skeleton works with muscles and helps in movement. For example many bones of the skeleton act as levers.

Q.4: Label the biceps and triceps in the following diagrams and also mention their contracted or relaxed states.

Ans:



Understanding the Concepts

Q.1 What are the main components of the axial skeleton and the appendicular skeleton of human.

Ans: For answer see Page # 90 In Al-Ghazali Rehnuma Notes.

Q.2 Describe the types of joints and give examples.

Ans: For answer see Page # 95 In Al-Ghazali Rehnuma Notes.

Q.3 What are ligaments and tendons? What function do they perform?

Ans: For answer see Page # 96 In Al-Ghazali Rehnuma Notes.

Q.4 Explain antagonism in muscle action selecting biceps and triceps as example.

Ans: For answer see Page # 98 In Al-Ghazali Rehnuma Notes.

Note: These are long Questions. For answer consult P.T.B/Al-Ghazali Rahnuma Notes.



Chapter Number
14

Reproduction

All Punjab Past Board Papers
2014 - 2020

Smart Syllabus

(14.1) Reproduction, (14.2) Method of Asexual Reproduction, (14.2.1) Binary Fission (14.2.2) Fragmentation, (14.2.3) Budding, (14.2.4) Spore Formation (14.2.5) Parthenogenesis (Pg. 70-74), (14.2.6) Artificial Vegetative Propagation (Pg. 76) (14.3) Sexual Reproduction in Plants, (14.3.2) Pollination, (14.3.4) Germination of seed (Pg. 78-83), (14.4) Sexual Reproduction in Animals, (14.4.2) Fertilization (Pg. 86) AIDS - A sexually Transmitted Disease (Pg. 89).

Class Work:

Questions: Multiple Choice (1,2,5,6) (PTB: Pg # 91)

Home Work:

Short Questions (2 - 5), Understanding the Concepts (1,3,5) (PTB: Pg # 92)

Lecture Number 12: (PTB Pg # 70 to 78)

14.1

Reproduction

Method of Asexual Reproduction

All Punjab Past Board
Papers

MCQ's
(Multiple Choice Questions)

2014 - 2020

- _____ is essential for the continuation of species. (LHR-I/II, FSD-I, DGK-I, SWL-I, MUL-II)
(A) reproduction (B) locomotion (C) respiration (D) cloning
- Some invertebrates also reproduce through binary fission. (LHR-I/II, MUL-I, SGD-I, DGK-I/II, SWL-I/II)
(A) Sexual Reproduction (B) Asexual Reproduction
(C) Pollination (D) Cloning
- Microspores are produced by: (GUJ-I/II, MUL-I/II, SGD-I/II, DGK-II, SWL-II)
(A) Mitosis (B) Meiosis (C) Fission (D) Budding

| | | | | | |
|---|------------------|---|--------------------------|---|-------------|
| 1 | (A) reproduction | 2 | (B) Asexual Reproduction | 3 | (B) Meiosis |
|---|------------------|---|--------------------------|---|-------------|

All Punjab Past Board
Papers

Short Questions
(Subjective Type)

2014 - 2020

- Define reproduction.

(FSD-I/II, MUL-I/II, SGD-I/II, DGK-II, SWL-II)

Ans: Reproduction: Reproduction is defined as the production of individuals of the same species i.e. the next generation of species. While it is one of the fundamental characteristics of living things, it is not an essential life process.

- Describe importance of reproduction. (LHR-I/II, GUJ-I/II, FSD-I/II, MUL-I, SGD-II, DGK-I, SWL-II)

Ans: Importance of Reproduction: An individual can live without reproducing, but a species cannot survive without reproduction.

(i) Continuation of species

(ii) Transfer of genetic material

(iii) Production of more offsprings

(iv) Selection of fittest individual

3. Differentiate between sexual and asexual reproduction.

Ans: Sexual Reproduction: Sexual reproduction involves the joining (fusion) of male and female sex cells i.e. gametes. (SGD-GII, GUJ-GII, FSD-GI, RWP-GII)

Asexual Reproduction: Asexual reproduction means simple cell division that produces an exact duplicate of an organism.

4. Define Reproduction and give names of two types.

(LHR-I/II, FSD-I, DGK-I, SWL-I)

Ans: Reproduction: The production of individuals of the same species called reproduction. It produces the next generation of species. It is a fundamental characteristic of living things.

Types: (I) Sexual Reproduction (II) Asexual Reproduction

Lecture Number 13: (PTB Pg # 70 to 78)

14.2

Method of Asexual Reproduction

Binary Fission, Fragmentation, Budding, Spore Formation, Parthenogenesis, Vegetative Propagation

All Punjab Past Board
Papers

MCQ's

(Multiple Choice Questions)

2014 - 2020

- Rhizopus reproduces asexually by:** (LHR-I/II, GUJ-I/II, FSD-I/II, MUL-I, SGD-II, DGK-I, SWL-I)
 - Binary Fission
 - Spore formation
 - Budding
 - Endospores formation
- A corm develops into new garlic plant. This process of reproduction is called:** (FSD-I/II, MUL-I/II, SGD-I/II, DGK-II, SWL-II)
 - gametogenesis
 - vegetative reproduction
 - meiosis
 - regeneration
- These are horizontal underground stems with scale leaves:** (LHR-II, GUJ-I/II, FSD-I, MUL-I/II, SGD-I/II, DGK-II, SWL-II)
 - tubers
 - rhizomes
 - suckers
 - none of these
- Garlic is reproduced by:** (LHR-I/II, GUJ-I/II, FSD-I/II, MUL-I, SGD-II, DGK-I, SWL-I)
 - Bulbs
 - Rhizome
 - Corms
 - Stem tubers
- Vegetative propagation in mint takes place by:** (LHR-I/II, FSD-I, DGK-I, SWL-I, MUL-II)
 - Rhizome
 - Corms
 - Leaves
 - Suckers
- In animals process of reproduction without fertilization is called:** (LHR-I/II, MUL-I, SGD-I, DGK-I/II, SWL-I/II)
 - parthenocarpy
 - parthenogenesis
 - tissue culture
 - fission
- This method is used to propagate peach and plum trees:** (LHR-II, GUJ-I/II, FSD-I, MUL-I/II, SGD-I/II, DGK-II, SWL-II)
 - Cutting
 - Grafting
 - Bulbs
 - Corms
- Binary Fission is seen in:** (FSD-I/II, MUL-I/II, SGD-I/II, DGK-II, SWL-II)
 - Yeast
 - Planaria
 - Hydra
 - Corals
- The latest method of vegetative propagation is:** (MUL-I/II, SGD-I/II, DGK-II, SWL-II)
 - cutting
 - grafting
 - layering
 - cloning

10. Root develops from: (LHR-I/II, GUJ-I/II, FSD-I/II, MUL-I, SGD-II, DGK-I, SWL-I)
 (A) Testa (B) Plumule (C) Micropyle (D) Radicle
11. The latest method of vegetative propagation is: (LHR-I/II, FSD-I, DGK-I, SWL-I, MUL-II)
 (A) Budding (B) Cuttings (C) Cloning (D) Bulbs
12. The example of corms is: (LHR-II, GUJ-I/II, FSD-I, MUL-I/II, SGD-I/II, DGK-II, SWL-II)
 (A) Ferns (B) Ginger (C) Onion (D) Dasheen
13. The example of stem tuber is: (FSD-I/II, MUL-I/II, SGD-I/II, DGK-II, SWL-II)
 (A) Potato (B) Dasheen (C) Onion (D) Water Lilly
14. Rhizopus reproduce asexually by: (GUJ-I/II, MUL-I/II, SGD-I/II, DGK-II, SWL-II)
 (A) Binary fission (B) Budding (C) Spore (D) Endospore
15. Bryophyllum (pather Chut) is a example of: (LHR-I/II, FSD-I, DGK-I, SWL-I, MUL-II)
 (A) Stem Tubers (B) Bulb (C) Suckers (D) Leaves
16. Amoeba reproduces a sexually by: (GUJ-I/II, MUL-I/II, SGD-I/II, DGK-II, SWL-II)
 (A) Budding (B) Binary fission (C) Fragmentation (D) Multiple fission
17. Asexual reproduction by suckers takes place in: (LHR-I/II, FSD-I, DGK-I, SWL-I, MUL-II)
 (A) Mint (B) Lily (C) Ginger (D) Potato
18. Which method of natural vegetative reproduction is found in chrysanthemum: (FSD-I/II, MUL-I/II, SGD-I/II, DGK-II, SWL-II)
 (A) corms (B) bulbs (C) stem tubers (D) suckers
19. The plant that reproduces by stem tuber: (LHR-I/II, FSD-I, DGK-I, SWL-I, MUL-II)
 (A) Onion (B) Potato (C) Garlic (D) Ginger

Answers

| | | | |
|------------------------|--------------------------------|-----------------|------------------------|
| 1. (B) Spore formation | 2. (B) vegetative reproduction | 3. (B) rhizomes | 4. (C) Corms |
| 5. (D) Suckers | 6. (B) parthenogenesis | 7. (B) Grafting | 8. (B) Planaria |
| 9. (D) cloning | 10. (D) Radicle | 11. (C) Cloning | 12. (D) Dasheen |
| 13. (A) Potato | 14. (C) Spore | 15. (D) Leaves | 16. (B) Binary fission |
| 17. (A) Mint | 18. (D) suckers | 19. (B) Potato | |

All Punjab Past Board
Papers

Short Questions
(Subjective Type)

2014 - 2020

1. Define binary fission with example.

(FSD-I/II, MUL-I/II, SGD-I/II, DGK-II, SWL-II)

Ans: Binary Fission: Binary fission means "division into two". It is the simplest and most common method of asexual reproduction. It occurs in prokaryotes (bacteria), many unicellular eukaryotes e.g. and some invertebrates.

2. What are endospores?

(LHR-II, GUJ-I/II, FSD-I, MUL-I/II, SGD-I/II, DGK-II, SWL-II)

Ans: Under unfavourable conditions, some species of bacteria reproduce by forming spores, e.g. Clostridium and Bacillus species. The bacterial spores are also thick-walled. They are formed inside bacterial cells, so are called endospores.

3. Define parthenogenesis.

(FSD-I/II, MUL-I/II, SGD-I/II, DGK-II, SWL-II)

Ans: Parthenogenesis is a form of asexual reproduction, in which an unfertilized egg

develops into new offspring. Some fishes, frogs and insects reproduce by means of parthenogenesis.

4. **What do you mean by vegetative propagation in plants?** (LHR-I/II, SWL-I, MUL-II)
Ans: When vegetative parts of plants i.e. roots, stems or leaves give rise to new plant, the process is called vegetative reproduction or vegetative propagation. It occurs naturally, and can also be brought about artificially.

5. **Write down the name of different methods of natural vegetative propagation.** (LHR-II, GUJ-I/II, FSD-I, MUL-I/II, SGD-I/II, DGK-II, SWL-II)

Ans: The name of different methods of natural vegetative propagation are Bulbs, Corms, Rhizomes and stem tubers.

6. **Describe the method of reproduction in Corals and Hydra.**

(LHR-I/II, FSD-I, DGK-I, SWL-I, MUL-II)

Ans: Animals such as sponges, Hydra and corals also reproduce by means of budding. In them, a small bud is formed on the side of body, by mitosis. This bud enlarges by the formation of more cells. It then detaches from the parent body and grows into new organism.



7. **How reproduction take place through bulbs in plants? Give examples.**

(LHR-I/II, FSD-I, DGK-I, SWL-I, MUL-II)

Ans: Bulbs are short underground stems surrounded by thick, fleshy leaves that contain stored food. Adventitious roots emerge under the base of bulb while shoots emerge from the top of the base. Tulips, onions and water lilies reproduce by bulbs.

8. **Define stem tuber with example.**

(LHR-I/II, FSD-I, DGK-I, SWL-I, MUL-II)

Ans: Stem Tuber: Stem tubers are the enlarged portions of an underground stem (rhizome). There are aggregations of tiny buds in the form of "eye" along the surface of tuber. Each bud develops into shoot that grows upward and also produces roots.

Example: Potatoes and yams reproduce by tubers.

9. **How plants reproduce through suckers? Give Example.**

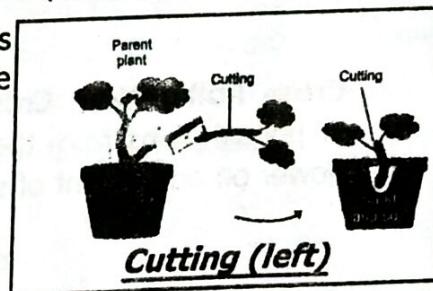
(LHR-II, GUJ-I/II, FSD-I, MUL-I/II, SGD-I/II, DGK-II, SWL-II)

Ans: Suckers are lateral stems close to ground level. A sucker grows underground from some distance and then turns up, producing the new plant. Mint and chrysanthemum reproduce in this way.

10. **What is meant by cutting? Give one example also.** (LHR-I/II, FSD-I, DGK-I, SWL-I, MUL-II)

Ans: Cutting: In artificial vegetative propagation, cuttings are taken from stem or roots of parent plant and are placed in soil.

Example: Roses are propagated by stem cuttings.



11. **Write the disadvantages of artificial vegetative propagation of plants.**

(LHR-II, GUJ-I/II, FSD-I, MUL-I/II, SGD-I/II, DGK-II, SWL-II)

Ans: Disadvantages of artificial vegetative propagation: In this method, plants do not have genetic variations. Species specific diseases can attack and this can result in the destruction of entire crop.

12. **Differentiate between cloning and tissue culture.** (LHR-I/II, FSD-I, DGK-I, SWL-I, MUL-II)

Ans: Cloning: Cloning is the latest method of vegetative propagation. In this method,

Identical offsprings are produced from a single parent using its vegetative tissue cell.

Tissue culture: Tissue culture is the technique applied on cloning. Tissues are taken from any part of plant and are put in a suitable nutrient medium. The tissue cells start mitosis and produce masses of cells called calluses.

13. Write down procedure of tissue culture. (LHR-I/II, MUL-I, SGD-I, DGK-I/II, SWL-I/II)

Ans: Tissue culture is the technique applied in the method of cloning. Tissues are taken from some part of plant and placed in a suitable nutrient medium. The tissue cells start mitosis and produce masses of cells which are called calluses. These calluses are transferred to other medium that contains different hormones for the formation of roots, stem and leaves. Calluses make these structures and grow into new small plants. The small plants are then planted in pots and then in fields.

14. Define vegetative propagation. Also write the names of its two methods. (LHR-II, GUJ-I/II, FSD-I, MUL-I/II, SGD-I/II, DGK-II, SWL-I/II)

Ans: When vegetative parts of plant (root, stem or leaves) give rise to new plants is called vegetative propagation.

(i) Cuttings (ii) Grafting

15. How does budding occurs in Corals? (GUJ-I/II, MUL-I/II, SGD-I/II, DGK-II, SWL-I/II)

Ans: Reproduction in Corals: Sponges, Hydra and corals reproduce by budding. A small bud is formed on a side of body by mitosis. This bud enlarges by the formation of more cells. In corals, the buds do not detach from parent body. Therefore corals form big colonies. Because the buds grow into new organisms by remaining attached to the parent body.

16. How does yeast reproduce asexually? (FSD-I/II, MUL-I/II, SGD-I/II, DGK-II, SWL-I/II)

Ans: Yeast: In this type of asexual reproduction, a bud develops as a small outgrowth from parent's body. Yeast reproduce asexually through budding.

17. What does develop from radicle and plumule of seed? (LHR-I/II, FSD-I, SWL-I, MUL-I/II)

Ans: The radicle of embryo develops into new roots while the plumule develops into new shoot.

18. Differentiate between self and cross pollination. (LHR-II, MUL-I, SGD-II, DGK-II, SWL-I/II)

Ans: Self Pollination: Self pollination is the transfer of pollen grains from anther to the stigma of same flower or other flower of same plant.



Self Pollination

Cross Pollination: Cross pollination is the transfer of pollen grains from the flower on one plant to the flower on other plant of same species.



Cross Pollination

19. Why the spores of Bacteria are called Endospore? (LHR-I/II, FSD-I, DGK-I, SWL-I, MUL-I/II)

Ans: Under unfavourable conditions, some species of bacteria reproduce by forming spores, e.g. Clostridium and Bacillus species. The bacterial spores are thick-walled. They are formed inside bacterial cells, so are called endospores.

20. How does honey bee reproduce? (LHR-I/II, FSD-I, DGK-I, SWL-I, MUL-I/II)

Ans: Reproduction in Honey bee: Honey bee reproduces through a process called parthenogenesis. In this method queen honeybee lays eggs in the cells

honeycomb. Many eggs remain unfertilised and develop into haploid males (drones) by parthenogenesis. At the same time, some eggs are fertilized by male bees and these develop into diploid females (new queen and worker bees).

21. **How does vegetative propagation take place in Bryophyllum?**

(LHR-I/II, MUL-I, SGD-I, DGK-I/II, SWL-I/II)

Ans: Vegetative Propagation: Vegetative propagation by leaves is not common and is seen in plants such as Bryophyllum (Pathar chut). This plant has fleshy leaves and adventitious buds are present at the margins of leaves. When leaf falls on ground, the buds grow into new plants.

22. **Define regeneration.**

(LHR-II, GUJ-I/II, FSD-I, MUL-I/II, SGD-I/II, DGK-II, SWL-II)

Ans: Regeneration: It is the process in which body is cut into two halves and the missing body parts are regenerated in both halves. This type of reproduction is called regeneration.

Example: Regeneration is common in planaria and many echinoderms.

23. **Define Pollen tube.**

(GUJ-I/II, MUL-I/II, SGD-I/II, DGK-II, SWL-II)

Ans: Pollen Tube: When pollen grains mature, they are transferred to stigma. It is called pollination. On reaching the stigma, the tube nucleus of pollen grain constructs a tube which is called pollen tube.

24. **What are corms?**

(LHR-I/II, MUL-I, SGD-I, DGK-I/II, SWL-I/II)

Ans: Corms: Corms are short and swollen underground stems containing stored food. Buds are present at the top of corm. From a bud, shoot grows and forms a new plant. Dasheen and garlic reproduce by corms.

Lecture Number 14: (PTB Pg # 78 to 84)

14.3

Sexual Reproduction in Plants

Pollination, Germination of seed

All Punjab Past Board
Papers

MCQ's

(Multiple Choice Questions)

2014 - 2020

- Fourth whorl of flower is:** (LHR-II, GUJ-I/II, FSD-I, MUL-I/II, SGD-I/II, DGK-II, SWL-II)
(A) Calyx (B) Corolla (C) Androecium (D) Gynoecium
- Optimum temperature for seed germination is:** (LHR-I/II, FSD-I, DGK-I, SWL-I, MUL-II)
(A) 25–30°C (B) 30–35°C (C) 15–25°C (D) 35–38°C
- Pollen tube carries:** (GUJ-I/II, MUL-I/II, SGD-I/II, DGK-II, SWL-II)
(A) Eggs (B) Sperms (C) Microspores (D) Megaspores
- Calyx is the outer most whorl of the flower and bears the colour:** (LHR-I/II, FSD-I, DGK-I, SWL-I, MUL-II)
(A) Red (B) Green (C) Blue (D) White
- It is not a part of carpel:** (FSD-I/II, MUL-I/II, SGD-I/II, DGK-II, SWL-II)
(A) Ovary (B) Anther (C) Stigma (D) Style
- Ovary is ripened into:** (LHR-I/II, GUJ-I/II, FSD-I/II, MUL-I, SGD-II, DGK-I, SWL-I)
(A) Seed (B) Flower (C) fruit (D) Sweetness
- There is a scar on seed coat of seed which is called:** (LHR-I, FSD-I, DGK-I, SWL-I, MUL-II)
(A) Radical (B) Hilum (C) Integument (D) Plumule

8. Female reproductive part of flower is called: (LHR-I/II, FSD-I, DGK-I, SWL-I, MUL-II)
(A) Androecium (B) gynoecium (C) Calyx (D) Corolla
9. The outermost whorl of flower is called: (LHR-I/II, FSD-I, DGK-I, SWL-I, MUL-II)
(A) Calyx (B) Corolla (C) Androecium (D) Gynoecium
10. The third whorl of Flower is: (LHR-II, GUJ-I/II, FSD-I, MUL-I/II, SGD-I/II, DGK-II, SWL-II)
(A) Calyx (B) Corolla (C) Androecium (D) Gynaecium
11. The units of androecium is: (FSD-I/II, MUL-I/II, SGD-I/II, DGK-II, SWL-II)
(A) Stamens (B) Anther (C) Pollen grains (D) Gametes
12. The transfer of pollen grains from flower's another to the stigma is called: (LHR-I/II, MUL-I, SGD-I, DGK-I/II, SWL-I/II)
(A) fertilization (B) pollination (C) budding (D) fission
13. After fertilization in plants the seed develops from: (FSD-I, DGK-I, SWL-I, MUL-II)
(A) ovule (B) ovary (C) sepals (D) petals
14. In flower stigma, style and ovary is collectively called: (LHR-II, GUJ-I/II, FSD-I, MUL-I/II, SGD-I/II, DGK-II, SWL-II)
(A) sepal (B) petal (C) stamen (D) carpel
15. Reproductive part of plant is: (FSD-I/II, MUL-I/II, SGD-I/II, DGK-II, SWL-II)
(A) Stem (B) Leave (C) Root (D) Flower
16. The units of Gynoecium are called: (GUJ-I/II, MUL-I/II, SGD-I/II, DGK-II, SWL-II)
(A) Sepals (B) Petals (C) Carpels (D) Stamens
17. These reproduce by Budding: (LHR-I/II, FSD-I, DGK-I, SWL-I, MUL-II)
(A) Planaria (B) Corals (C) Rhizopus (D) Tulips
18. To attract flies and birds is the function of: (LHR-I/II, MUL-I, SGD-I, DGK-I/II, SWL-I/II)
(A) sepal (B) petal (C) anther (D) Stamen
19. In flower the whorl of carpels is called: (LHR-I/II, FSD-I, DGK-I, SWL-I, MUL-II)
(A) calyx (B) corolla (C) androecium (D) gynoecium
20. The example of insect pollinated flower is: (GUJ-I/II, MUL-I/II, SGD-I/II, DGK-II, SWL-II)
(A) corn (B) rose (C) willow (D) hazel
21. When pollen grains mature, they are transferred to: (LHR-I/II, FSD-I, DGK-I, SWL-I, MUL-II)
(A) Stigma (B) Carpel (C) Sepal (D) Root
22. Male reproductive part of flower is called: (GUJ-I/II, MUL-I/II, SGD-I/II, DGK-II, SWL-II)
(A) Carpel (B) Stamen (C) Style (D) Corolla

Answers

| | | | |
|------------------|--------------------|-------------------|---------------------|
| 1. (D) Gynoecium | 2. (A) 25 – 30°C | 3. (B) Sperms | 4. (B) Green |
| 5. (B) Anther | 6. (C) fruit | 7. (B) Hilum | 8. (B) gynoecium |
| 9. (A) Calyx | 10. (C) Androecium | 11. (A) Stamens | 12. (B) pollination |
| 13. (A) ovule | 14. (D) carpel | 15. (D) Flower | 16. (C) Carpels |
| 17. (B) Corals | 18. (B) petal | 19. (D) gynoecium | 20. (B) rose |
| 21. (A) Stigma | 22. (B) Stamen | | |

All Punjab Past Board
PapersShort Questions
(Subjective Type)

2014 - 2020

1. What do you mean by sporophyte generation? (LHR-I/II, FSD-I, DGK-I, SWL-I, MUL-II)

Ans: Sporophyte Generation: In the life cycle of plants, two different generations alternate with each other. One generation is diploid and produces spores. It is called sporophyte generation.

2. Define alternation of generation in plants. (LHR-I/II, MUL-I, SGD-I, DGK-I/II, SWL-I/II)

Ans: In the life cycle of plants, two different generations alternate with each other. One generation is diploid and produces spores. It is called sporophyte generation. The other generation is haploid and produces gametes. It is called gametophyte generation. The phenomenon in which two different generations alternate with each other during life cycle is known as alternation of generation.

3. Define flower in term of botany. (FSD-I/II, MUL-I/II, SGD-I/II, DGK-II, SWL-II)

Ans: The flower is actually a condensed shoot with the nodes present very close to each other. The different parts of the flower are attached to the nodes. All the structures present at one node are collectively called the whorl.

4. Write down the name of flower parts. (LHR-I/II, FSD-I, DGK-I, SWL-I, MUL-II)

Ans: (I) calyx (II) corolla (III) androclum (IV) Gynoecium

5. Differentiate between zygote and endosperm. [DGK-II, LHR-II, SGD-I, BWP-I]

Ans: The pollen tube contains a tube nucleus and two sperms. The tube grows through style and ovary and enters ovule. Here, it bursts and releases the sperms. Both sperms enter the female gametophyte. One sperm fuses with egg and forms a diploid zygote. The other sperm fuses with diploid fusion nucleus and forms a triploid (3N) nucleus called endosperm nucleus.

6. Define pollination. Give two examples of air pollinated flower.

(LHR-I/II, FSD-I, DGK-I, SWL-I, MUL-II)

Ans: Pollination: Pollination is defined as the transfer of pollen grains from flower's anther to stigma. Two examples of air pollinated flowers are hazel and willow.

7. How seed and fruit are developed? (LHR-I/II, FSD-I, DGK-I, SWL-I, MUL-II)

Ans: Zygote develops into embryo and endosperm nucleus develops into endosperm tissue (food of the growing embryo). Ovule then becomes seed and ovary changes into fruit.

8. What is meant by dormancy? (GUJ-I/II, MUL-I/II, SGD-I/II, DGK-II, SWL-II)

Ans: Dormancy: Most seeds go through a period during which there is no growth. This period is called the dormancy of seed. Dormant seeds are ripe seeds but do not germinate. Under favourable conditions, the seeds break dormancy and begin to germinate.

9. What is seed coat? Write down its function. (LHR-I/II, FSD-I, DGK-I, SWL-I, MUL-II)

Ans: Seed coat (or testa) develops from the integument, originally surrounding the ovule. It may be a paper-thin layer (e.g. peanut) or thick and hard (e.g. coconut). Seed coat protects embryo from mechanical injury and from drying out.

10. What is gynoecium? (LHR-II, GUJ-I/II, FSD-I, MUL-I/II, SGD-I/II, DGK-II, SWL-II)

Ans: Gynoecium: Gynoecium is the female reproductive part of flower. Its units are called carpels (or pistils).

11. Differentiate between epicotyl and hypocotyl.

(LHR-I/II, FSD-I, DGK-I, SWL-I, MUL-I)

Ans: The embryonic stem above the point of attachment of cotyledon (s) is called epicotyl.
The embryonic stem below the point of attachment is hypocotyl.

12. What is micropyle? What is its use for seed?

(FSD-I/II, MUL-I/II, SGD-I/II, DGK-II, SWL-II)

Ans: Micropyle: At one end of hilum, there is a micropyle.

Function: This is same opening through which the pollen tube entered ovule. Seed also used micropyle for the absorption of water.

13. Write the process of spore formation in sporangium.

(LHR-I/II, FSD-I, DGK-I, SWL-I)

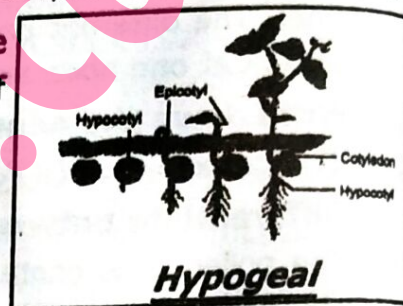
Ans: Spore formation: Spore formation is generally seen in most fungi Rhizopus. When Rhizopus reaches reproductive age, its body cells form thick walled spore sacs called sporangia (sing. sporangium). Inside each sporangium, a cell divides many times and forms many daughter cells called spores.

14. What is meant by Hypogeal Germination? Give two examples.

(LHR-II, GUJ-I/II, FSD-I, MUL-I/II, SGD-I/II, DGK-II, SWL-II)

Ans: Hypogeal germination: In hypogeal germination, the epicotyl elongates and forms the hook. In this type of germination, the cotyledons stay underground.

Examples: Pea, maize and coconut etc.



15. What is double fertilization? In which plants it occurs?

(FSD-I/II, MUL-I/II, SGD-I/II, DGK-II, SWL-II)

Ans: Double fertilization is a process in which two male gametes at a time fuse with two female cells. This process of double fertilization takes place only in the flowering plants.

16. What is germination? Give its types.

(LHR-I/II, FSD-I, DGK-I, SWL-I, MUL-II)

Ans: Germination: Seed germination is a process by which a seed embryo develops into a seedling during germination, embryo soaks up water which causes it to swell, splitting the seed coat. Root is the first structure that emerges from the radicle present in seed. It grows rapidly and absorbs water and nutrients from soil. In the next phase plumule develops into tiny shoot which elongates and comes out of soil.

Types: (i) Hypocotyl (ii) Epicotyl

17. State the role of water or moisture for seed Germination.

(LHR-I/II, MUL-I, SGD-I, DGK-I/II, SWL-I/II)

Ans: Seeds of most plants have low water content, and germination cannot occur until seed coat or other tissues have imbibed (taken in) water.

18. What is Sporangia?

(LHR-II, GUJ-I/II, FSD-I, MUL-I/II, SGD-I/II, DGK-II, SWL-II)

Ans: Sporangia: When Rhizopus reaches reproductive age, its body cells form thick walled spore sacs called sporangia (singular "sporangium").

Example: Rhizopus

19. What is Gynoecium? Tell its unit.

(LHR-I/II, GUJ-I/II, FSD-I/II, MUL-I, SGD-II, DGK-I, SWL-I)

Ans: Gynoecium: Gynoecium is the female reproductive part of flower.

Unit: Its units are called carpels (or pistils). Each carpel is made up of the basal ovary, middle style and upper stigma.

20. What is Calyx?

(LHR-II, GUJ-I/II, FSD-I, MUL-I/II, SGD-I/II, DGK-II, SWL-II)

Ans: **Calyx:** It is the outermost whorl. It is usually green in colour. Its individual leaflets are called sepals. Sepals protect the inner whorls at bud stage.

21. What is androecium and give its units?

(GUJ-I/II, MUL-I/II, SGD-I/II, DGK-II, SWL-II)

Ans: **Androecium** is the male reproductive part of flower. Its units are called stamens. Each stamen has a thread-like filament at the free end of which anther is attached.

22. Write the names of reproductive whorls of flower. (LHR-I/II, FSD-I, DGK-I, SWL-I, MUL-II)

Ans: There are two main reproductive whorls of flower:

(i) **Androcelum:** Androecium is the male reproductive part of flower. Its units are called stamens. Each stamen has a thread-like filament at the free end of which anther is attached.

(ii) **Gynoecium:** Gynoecium is the female reproductive part of flower.

Unit: Its units are called carpels (or pistils). Each carpel is made up of the basal ovary, middle style and upper stigma.

Lecture Number 15: (PTB Pg # 84 to 90)

14.4

Sexual Reproduction in Animals

Fertilization, AIDS - A sexually Transmitted Disease

All Punjab Past Board
Papers

MCQ's

(Multiple Choice Questions)

2014 - 2020

- Normally external fertilization occurs in:** (LHR-I/II, FSD-I, DGK-I, SWL-I, MUL-II)
(A) Body (B) Air (C) Water (D) All of these
- Inside testes, the sperms are produced.** (LHR-I/II, MUL-I, SGD-I, DGK-I/II, SWL-I/II)
(A) Vas deferens (B) Sperm duct
(C) Seminiferous tubule (D) Collecting ducts
- Diploid (2N) is:** (LHR-II, GUJ-I/II, FSD-I, MUL-I/II, SGD-I/II, DGK-II, SWL-II)
(A) Egg cell (B) Sperm cell (C) Zygote (D) Endosperm
- External Fertilization is found in:** (LHR-I/II, GUJ-I/II, FSD-I/II, MUL-I, SGD-II, DGK-I, SWL-I)
(A) Mammals (B) Birds (C) Reptiles (D) Amphibian
- A cluster of specialized cells which surrounds and nourishes, each egg cell is called:** (LHR-I/II, MUL-I, SGD-I, DGK-I/II, SWL-I/II)
(A) Fallopian tubes (B) Follicle (C) Uterus (D) Cervix
- Testes and ovaries are called:** (LHR-I/II, FSD-I, DGK-I, SWL-I, MUL-II)
(A) Glands (B) Gonads (C) Gametes (D) Embryo
- The male and female gametes are produced in specialized organs are called:** (LHR-II, GUJ-I/II, FSD-I, MUL-I/II, SGD-I/II, DGK-II, SWL-II)
(A) Gametogenesis (B) Zygote (C) Placenta (D) Gonads
- Some cells of ovary prepare structures called:** (LHR-I/II, FSD-I, DGK-I, SWL-I, MUL-II)
(A) Follicles (B) Seminal vesicles
(C) Seminiferous tubules (D) Vas deferens
- Male gonads are called:** (LHR-II, GUJ-I/II, FSD-I, MUL-I/II, SGD-I/II, DGK-II, SWL-II)
(A) Sperms (B) Eggs (C) Ovaries (D) Testes

10. Queen honey bee is:

(A) Haploid

(B) Triploid

(C) Diploid

(D) Polyploid

Answers

| | | | |
|-----------------|----------------------------|---------------|------------------|
| 1. (C) Water | 2. (C) Seminiferous tubule | 3. (C) Zygote | 4. (D) Amphibian |
| 5. (B) Follicle | 6. (B) Gonads | 7. (D) Gonads | 8. (A) Follicles |
| 9. (D) Testes | 10. (C) Diploid | | |

All Punjab Past Board Papers

Short Questions
(Subjective Type)

2014 - 2020

1. What is meant by Gametogenesis?

(FSD-I/II, MUL-I/II, SGD-I/II, DGK-II, SWL-I)

Ans: Gametogenesis: The formation of gametes is called gametogenesis. In the process, diploid (2N) gametomother cells undergo meiosis and form male and female haploid (1N) gametes (Sperms and egg cells or ova).

2. What is meant by spermatogenesis?

(LHR-I/II, FSD-I, DGK-I, SWL-I, MUL-I)

Ans: Spermatogenesis: The production of sperms in testes is called spermatogenesis and the production of egg cells in ovaries is called oogenesis.

3. State fertilization.

(GUJ-I/II, MUL-I/II, SGD-I/II, DGK-II, SWL-I)

Ans: Fertilization: The fusion of male and female gametes to form a zygote is called fertilization. There are two mechanisms by which fertilization can take place i.e. external fertilization and internal fertilization.

4. What is Oogenesis?

(LHR-I/II, FSD-I, DGK-I, SWL-I, MUL-I)

Ans: Oogenesis: The production of eggs in ovaries is called oogenesis.

5. Differentiate between Internal and External Fertilization.

(LHR-I/II, FSD-I, DGK-I, MUL-I)

Ans: External Fertilization: In external fertilization, egg cells are fertilized outside the body. It requires both the male and the female animals to release their gametes in their surroundings at almost the same time. It occurs in many invertebrates and the first two groups of vertebrates i.e. fishes and amphibians.

Internal Fertilization: In internal fertilization, egg cells are fertilized within the reproductive tract of female. It occurs in reptiles, birds and mammals.

6. Differentiate between prostate gland and Cowper's glands.

(GUJ-I/II, MUL-I/II, SGD-I/II, DGK-II, SWL-I)

Ans: Prostate gland produces a secretion that neutralizes the acidity of the fluid. Cowper's glands produce secretions that lubricate the ducts.

7. STD stands for? Write down the name of one STD

(LHR-II, GUJ-I/II, FSD-I, MUL-I/II, SGD-I/II, DGK-II, SWL-II)

Ans: STD stands for "Sexually transmitted diseases".

The name of one STD is "AIDS (Acquired Immuno Deficiency Syndrome)".

8. Write down two main causes for spread of AIDS.

(LHR-I/II, FSD-I, DGK-I, SWL-I, MUL-II)

Ans: Two main causes for spread of AIDS are:

(a) Unprotected sexual activities.

(b) Use of infected needles or transfusion of infected blood.

9. Write down the name of causing agent of AIDS.

(LHR-I/II, FSD-I, DGK-I, SWL-I, MUL-II)

Ans: AIDS is caused by human immunodeficiency virus (HIV).

10. HIV stand for?

(LHR-II, GUJ-I/II, FSD-I, MUL-I/II, SGD-I/II, DGK-II, SWL-II)

Ans: Human Immuno-deficiency Virus**11. Define internal fertilization with example.**

(LHR-I/II, MUL-I, SGD-I, DGK-I/II, SWL-I/II)

Ans: **Internal Fertilization:** In internal fertilization, egg cells are fertilized within the reproductive tract of female. It occurs in reptiles, birds and mammals.**12. Differentiate between spermatogenesis and oogenesis.**

(LHR-II, GUJ-I/II, FSD-I, MUL-I/II, SGD-I/II, DGK-II, SWL-II)

Ans: **Spermatogenesis:** The production of sperms in testes is called spermatogenesis.**Oogenesis:** The production of eggs in ovaries is called oogenesis.**13. How spermatids are converted into sperms?**

(LHR-I/II, FSD-I, DGK-I, SWL-I, MUL-II)

Ans: Spermatids are non-motile. Some changes occur in them to convert them into motile cells species. Their nuclei shrink and some structures are formed e.g. a corner which is called acrosome, a tail and a mitochondrial ring. After these changes, spermatids are called sperms.**14. What is meant by external fertilization?**

(LHR-I/II, FSD-I, DGK-I, SWL-I, MUL-II)

Ans: **External Fertilization:** This is a type of fertilization in which egg cells are fertilized outside of body of female.**Examples:** This type of fertilization occurs in many invertebrates, fishes and amphibians.**15. What are gonads? Write down the names of male and female gonads.**

(GUJ-I/II, MUL-I/II, SGD-I/II, DGK-II, SWL-II)

Ans: Testes (Singular testis) and ovaries are the male and female reproductive organs i.e. gonads. In addition to producing gametes, gonads also produce hormones, called sex hormones. Testes secrete hormones e.g. testosterone and Ovaries secrete estrogen and progesterone.**16. Write down two main objectives of National Aids Control Program.**

(LHR-II, GUJ-I/II, FSD-I, MUL-I/II, SGD-I/II, DGK-II, SWL-II)

Ans: Pakistan's Federal Ministry of Health established NACP in 1987. The main objective of this programme is to help the public for the prevention of HIV transmission, safe blood transfusions and reduction of STDs.

◆◆◆

Home Work: Syllabus**Exercise****Class Work:**

Questions: Multiple Choice (1,2,5,6) (PTB: Pg # 91)

Home Work:

Short Questions (2 – 5), Understanding the Concepts (1,3,5) (PTB: Pg # 92)

Multiple Choice Questions (MCQ's)**(1) Growing an entire new plant from part of the original plant is called:**

- | | |
|-------------------|----------------------------|
| (a) Budding | (b) Regeneration |
| (c) Fragmentation | (d) Vegetative propagation |

(2) Rhizopus reproduces asexually by:

- | | |
|--------------------|------------------|
| (a) Binary fission | (b) Regeneration |
|--------------------|------------------|

- (c) Spore formation
- (5) **Pollination is the transfer of pollens from;**
- (a) Anther to stigma
- (b) Stigma to anther
- (c) Sepal to petal
- (d) Petal to sepal
- (6) **Double fertilization in plants means;**
- (a) Fusion of two sperms with two egg cells
- (b) Fusion of one sperm with egg cell and other sperm with fusion nucleus
- (c) Fusion of two sperms with a single egg cell
- (d) Fusion of tube nucleus with fusion nucleus and sperm with egg cell

Answers

| | | | | | |
|---|---|---|---------------------|---|----------------------|
| 1 | (d) Vegetative | 2 | (c) Spore formation | 5 | (a) Anther to stigma |
| 6 | (b) Fusion of one sperm with egg cell and other sperm with fusion nucleus | | | | |

Short Questions

Q.2: Why do gardeners use the methods of cutting and grafting?

Ans. Gardeners and farmers use the methods of cutting and grafting for the rapid production of plants of beneficial characteristics.

Q.3: "Parthenogenesis is a type of asexual reproduction". Give comments on this statement?

Ans. Parthenogenesis is a type of asexual reproduction in which an unfertilized egg develops into new offspring. Therefore it is considered as a type of asexual reproduction. In fact it is a modified form sexual reproduction.

Q.4: Outline the life cycle of a flowering plant.

Ans. The plant body of an angiosperm is a diploid sporophyte. The male reproductive part of flower produces microspores. Microspore gives rise to male gametophyte generation. The female reproductive part of flower produces megaspores. Megaspore gives rise to female gametophyte generation. The processes of pollination, double fertilization and germination produce new plants.

Q.5: What structural adaptations will you find in a wind-pollinated flower?

Ans. These flowers are generally of small size. Their petals are green or dull in colour. They do not produce nectar.

Understanding the Concepts

Q.1: What are the different ways by which prokaryotes, protozoans and fungi reproduce asexually?

Ans. For answer see Page # 105 to 106 in Al-Ghazali Rehnuma Notes.

Q.3: Explain, how the epigeal and hypogeal germinations are different?

Ans. For answer see Page # 122 in Al-Ghazali Rehnuma Notes.

Q.5: Outline the methods of asexual reproduction in animals.

Ans. For answer see Page # 104 in Al-Ghazali Rehnuma Notes.

Note: These are long Questions. For answer consult P.T.B/Al-Ghazali Rehnuma Notes.

Chapter Number
15

Inheritance

All Punjab Past Board Papers
2014 - 2020

Smart Syllabus

(15.1) Introduction to Genetics, (15.2) Chromosomes and Genes, Watson Crick Model of DNA, How does DNA of Chromosomes work, Genotype and its types, (15.3) Mendel's Laws of Inheritance, (15.3.1) Mendel's Law of Segregation, (15.3.2) Mendel's Law of Independent Assortment. (PTB: Pg # 94 - 101)

Class Work:

Questions: Multiple Choice Questions (1- 7) (PTB: Pg # 109 - 110)

Home Work:

Short Questions (1-3) Understanding the Concepts (1-3) (PTB: Pg # 110)

Lecture Number 16: (PTB Pg # 94 to 94)

15.1

Introduction to Genetics

All Punjab Past Board
PapersMCQ's
(Multiple Choice Questions)

2014 - 2020

1. Transmission of characteristics from parents to offspring is called:

(OR) Genetics is the branch of biology in which we study.

(A) Inheritance

(B) Mutation

(LHR-II, GUJ-I/II, FSD-I, MUL-I/II, SGD-I/II, DGK-II, SWL-II)

(C) Regeneration

(D) Reproduction

2. The branch of Biology in which we study about inheritance is called:

(OR) The branch of Biology in which we study about inheritance is called:

(A) Microbiology

(B) Physiology

(LHR-I/II, GUJ-I/II, FSD-I/II, MUL-I, SGD-II, DGK-I, SWL-I)

(C) Genetics

(D) Ecology

3. Inherited characters are called.

(LHR-I/II, MUL-I, SGD-I, DGK-I/II, SWL-I/II)

(A) Fertilization

(B) Genetics

(C) Traits

(D) Genes

Answers

| | | | | |
|--------------------|-----------------|---------------|--|--|
| 1. (A) Inheritance | 2. (C) Genetics | 3. (C) Traits | | |
|--------------------|-----------------|---------------|--|--|

All Punjab Past Board
PapersShort Questions
(Subjective Type)

2014 - 2020

1. Define Genetics.

(LHR-II, GUJ-I/II, FSD-I, MUL-I/II, SGD-I/II, DGK-II, SWL-II)

Ans: **Genetics:** Genetics is the branch of biology in which we study inheritance. Inheritance means the transmission of characteristics from parents to offspring.

2. What do you meant Inheritance?

(GUJ-I/II, MUL-I/II, SGD-I/II, DGK-II, SWL-II)

Ans: **Inheritance:** Inheritance means the transmission of characteristics from parents to offspring. These characteristics are called the traits.

Example: In man height, colour of the eyes, intelligence etc. are all inheritable traits.

3. What are traits? Give an example.

(LHR-I/II, FSD-I, DGK-I, SWL-I, MUL-II)

Ans: **Traits:** The characteristics which are controlled and transmitted to next generations through genes are known as traits.

Example: In man height, colour of the eyes, intelligence etc. are all inheritable traits.

Lecture Number 17: (PTB Pg # 94 to 98)

15.2

Chromosomes and Genes

Watson Crick Model of DNA, How does DNA of Chromosomes work,
Genotype and its types

1. Genotype in which gene pair contains two identical alleles is called: (LHR-I/II, GUJ-I/II, FSD-I/II, MUL-I, SGD-II, DGK-I, SWL-I)
(A) Homozygous (B) Heterozygous (C) Hemizygous (D) Homologous
2. Person with Genotype-II has blood group: (GUJ-I/II, MUL-I/II, SGD-I/II, DGK-II, SWL-I)
(A) AB (B) B (C) O (D) A
3. The term "True Breeding" means: (LHR-I/II, FSD-I, DGK-I, SWL-I, MUL-I)
(A) Heterozygous (B) Homologous (C) Heterologous (D) Homozygous
4. Cytosine always pair with: (LHR-II, GUJ-I/II, FSD-I, MUL-I/II, SGD-I/II, DGK-II, SWL-I)
(A) Guanine (B) Thiamine (C) Adenine (D) Hydrogen
5. Genes consist of: (LHR-I/II, GUJ-I/II, FSD-I/II, MUL-I, SGD-II, DGK-I, SWL-I)
(A) RNA (B) mRNA (C) Protein (D) DNA
6. Dominant alleles are represented by: (FSD-I/II, MUL-I/II, SGD-I/II, DGK-II, SWL-I)
(A) Roman numbers (B) Capital letters
(C) Small letters (D) numerical numbers
7. James Watson and Francis Crick proposed the structure of DNA in: (GUJ-I/II, MUL-I/II, SGD-I/II, DGK-II, SWL-I)
(A) 1951 A.D (B) 1952 A.D (C) 1953 A.D (D) 1954 A.D
8. The locations of genes on chromosomes are known as: (LHR-I/II, GUJ-I/II, FSD-I/II, MUL-I, SGD-II, DGK-I, SWL-I)
(A) alleles (B) genotype (C) loci (D) nucleosomes
9. There are hydrogen bonds between cytosine and guanine: (GUJ-I/II, MUL-I/II, SGD-I/II, DGK-II, SWL-I)
(A) 2 (B) 3 (C) 4 (D) 5
10. Model of DNA structure was presented by: (LHR-I/II, MUL-I, SGD-I, DGK-I/II, SWL-I/II)
(A) Mendel (B) Buffon
(C) Lamark (D) Watson and Crick
11. The chromosomes carry the units of inheritance called the: (LHR-I/II, FSD-I, DGK-I, SWL-I, MUL-II)
(A) genes (B) alleles (C) phenotype (D) genotype
12. The alternate form of a gene is called: (LHR-I/II, GUJ-I/II, FSD-I/II, MUL-I, SGD-II, DGK-I, SWL-I)
(A) translation (B) allele (C) genotype (D) phenotype
13. Albinism is a trait: (LHR-I/II, MUL-I, SGD-I, DGK-I/II, SWL-I/II)
(A) co-dominant (B) dominant (C) heterozygous (D) recessive
14. Chromatin material is made up of: (LHR-I/II, FSD-I, DGK-I, SWL-I, MUL-II)
(A) DNA (B) Protein
(C) RNA (D) DNA and proteins

15. The number of pairs of homologous chromosomes in human cell:
(LHR-II, GUJ-I/II, FSD-I, MUL-I/II, SGD-I/II, DGK-II, SWL-II)
(A) 23 (B) 24 (C) 25 (D) 26
16. Place of existence of a gene on the chromosome is: (LHR-I/II, FSD-I, DGK-I, SWL-I, MUL-II)
(A) Locus (B) Karyotype (C) Chromatid (D) Centromere
17. The expression of the genotype in the form of trait is called:
(LHR-I/II, FSD-I, DGK-I, SWL-I, MUL-II)
(A) Genotype (B) Phenotype (C) Dominant (D) Recessive
18. DNA wraps around histone proteins and forms round structures, called:
(LHR-II, GUJ-I/II, FSD-I, MUL-I/II, SGD-I/II, DGK-II, SWL-II)
(A) nucleotides (B) chromatin (C) nucleosomes (D) chromosome
19. The specific sequence of DNA nucleotides is copied in the form of messenger RNA nucleotides is known as: (LHR-I/II, MUL-I, SGD-I, DGK-I/II, SWL-I/II)
(A) Transcription (B) Translation (C) Transduction (D) Translocation
20. The number of hydrogen bonds between adenine and thymine is:
(LHR-I/II, FSD-I, DGK-I, SWL-I, MUL-II)
(A) 1 (B) 2 (C) 3 (D) 4
21. The genotype in which the gene pair contains identical alleles are called:
(LHR-I/II, MUL-I, SGD-I, DGK-I/II, SWL-I/II)
(A) Locus (B) Mutations (C) Homozygous (D) Heterozygous
22. Guanine forms pair with:
(LHR-I/II, MUL-I, SGD-I, DGK-I/II, SWL-I/II)
(A) Adenine (B) Thymine (C) Cytosine (D) Carbon
23. Number of Nitrogen bases in D.N.A. is: (LHR-I/II, FSD-I, DGK-I, SWL-I, MUL-II)
(A) Four (B) Three (C) Two (D) Five
24. The genotype of blood group O is: (LHR-I/II, FSD-I, DGK-I, SWL-I, MUL-II)
(A) $I^A I^A$ (B) $I^B I^B$ (C) $I^A I$ (D) II
25. The Genotype in which the Gene Pair contains two different Alleles are called:
(LHR-I/II, FSD-I, DGK-I, SWL-I, MUL-II)
(A) Locus (B) Mutations (C) Homozygous (D) Heterozygous
26. A cross in which only one Trait is studied at a time is called:
(LHR-I/II, MUL-I, SGD-I, DGK-I/II, SWL-I/II)
(A) Monohybrid Cross (B) Single Hybrid cross
(C) Dihybrid Cross (D) Solohybrid Cross
27. Part of DNA that contains the instructions for the synthesis of a particular protein is called:
(LHR-I/II, FSD-I, DGK-I, SWL-I, MUL-II)
(A) Locus (B) Gene (C) Chromosomes (D) Polysome
28. An organism has two different alleles for a single trait. Its genotype is said to be: (LHR-I/II, FSD-I, DGK-I, SWL-I, MUL-II)
(A) Hemizygous (B) Heterozygous (C) Homozygous (D) Homologous
29. The alternative form of a gene is: (LHR-I/II, GUJ-I/II, FSD-I/II, MUL-I, SGD-II, DGK-I, SWL-I)
(A) allele (B) DNA (C) locus (D) histone

30. In transcription, the specific sequence of DNA nucleotides.

(LHR-I/II, MUL-I, SGD-I, DGK-I/II, SWL-I/II)

(A) RNA

(B) tRNA

(C) mRNA

(D) RNA-polymerase

31. Cytosine always forms hydrogen bond with:

(LHR-I/II, FSD-I, DGK-I, SWL-I, MUL-II)

(A) Thymine

(B) Guanine

(C) Adenine

(D) Protein

32. How many pairs of homologous chromosomes are present in human body cells?

(FSD-I/II, MUL-I/II, SGD-I/II, DGK-II, SWL-II)

(A) 22

(B) 23

(C) 24

(D) 25

33. Transcription is carried out by:

(LHR-I/II, MUL-I, SGD-I, DGK-I/II, SWL-I/II)

(A) mRNA

(B) ribosomes

(C) DNA

(D) chromatids

Answers

| | | | |
|----------------------|--------------------------|-----------------------|----------------------|
| 1. (A) Homozygous | 2. (C) O | 3. (D) Homozygous | 4. (A) Guanine |
| 5. (D) DNA | 6. (B) Capital letters | 7. (C) 1953 A.D | 8. (C) loci |
| 9. (B) 3 | 10. (D) Watson and Crick | 11. (A) genes | 12. (B) allele |
| 13. (D) recessive | 14. (D) DNA and proteins | 15. (A) 23 | 16. (A) Locus |
| 17. (B) Phenotype | 18. (C) nucleosomes | 19. (A) Transcription | 20. (B) 2 |
| 21. (C) Homozygous | 22. (C) Cytosine | 23. (A) Four | 24. (D) |
| 25. (D) Heterozygous | 26. (A) Monohybrid Cross | 27. (B) Gene | 28. (B) Heterozygous |
| 29. (A) allele | 30. (A) RNA | 31. (B) Guanine | 32. (B) 23 |
| 33. (C) DNA | | | |

All Punjab Past Board Papers

Short Questions
(Subjective Type)

2014 - 2020

1. Define Gene.

(FSD-I/II, MUL-I/II, SGD-I/II, DGK-II, SWL-II)

Ans: Gene: The part of DNA which contains specific instructions for protein synthesis is called genes.

2. What is meant by homologous chromosomes?

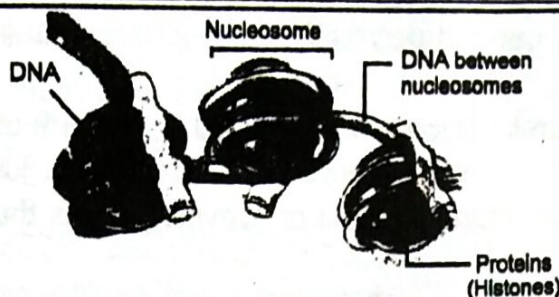
(LHR-I/II, FSD-I, DGK-I, SWL-I, MUL-II)

Ans: Homologous Chromosomes: A pair of chromosomes having the same size and shape and carrying alleles for the same traits are known as homologous chromosomes.

3. Describe the structure of chromosome.

(GUJ-I/II, MUL-I/II, SGD-I/II, DGK-II, SWL-II)

Ans: Structure of Chromosome: Chromosome is made of chromatin material (simply as chromatin). Chromatin is a complex material, made of DNA and proteins (mainly histone proteins). DNA wraps around histone proteins and forms round structures called nucleosomes. DNA is also present between nucleosomes. In this way, the nucleosomes and the DNA between them look like "beads on a string". The fibres consisting of nucleosomes condense into compact forms and get the structure of chromosomes.



Chemical composition of chromosome

4. **What is meant by nucleosomes?** (LHR-I/II, FSD-I, DGK-I, SWL-I, MUL-II)

Ans: **Nucleosomes:** DNA wraps around histone proteins and forms round structures, called nucleosome

5. **How DNA of chromosome work?** (FSD-I/II, MUL-I/II, SGD-I/II, DGK-II, SWL-II)

Ans: DNA is the genetic material i.e. it contains the instructions to direct all the functions of cells. It performs its role by giving instructions for the synthesis of specific proteins. Some proteins perform structural roles while the other act as enzymes to control all biochemical reactions of cells. In this way, whatever a cell does, is actually controlled by its DNA. In other words, DNA makes the characteristic or trait of cell or organism.

6. **Write any two main points of Watson-Crick Model of DNA.**

(LHR-II, GUJ-I/II, FSD-I, MUL-I/II, SGD-I/II, DGK-II, SWL-II)

Ans: In 1953 James Watson and Francis Crick proposed the structure of DNA.

(i) According to the Watson Crick model, a DNA molecule consists of two polynucleotide strands. These strands are coiled around each other in the form of a double helix.

(ii) There is a phosphate-sugar backbone on the outside of double helix, and the nitrogenous bases are on the inside.

7. **Write down the name of nitrogenous basis in double helical structure of DNA.** (FSD-I/II, MUL-I/II, SGD-I/II, DGK-II, SWL-II)

Ans. (1) adenine (2) thymine (3) cytosine (4) guanine

8. **What is meant by template?** (LHR-I/II, MUL-I, SGD-I, DGK-I/II, SWL-I/II)

Ans: During replication, the DNA double helix is unwound and the two strands are separated, much like the two sides of a zipper. Each strand acts as a template to produce another strand. Its N bases make pairs with the N-bases of new nucleotides. In this way, both template strands make new polynucleotide strands in front of them. Each template and its new strand together then form a new DNA double helix, identical to the original.

9. **Differentiate between transcription and translation.**

(LHR-I-II, FSD-I, GUJ-I-II, RWP-II, BWP-I, SGD-I, SWL-I)

Ans: **Difference between Transcription and Translation:**

| Transcription | Translation |
|--|---|
| During protein synthesis, the sequence of DNA nucleotides decides that what will be the sequence of amino acids. For this purpose, the specific sequence of DNA nucleotides is copied in the form of messenger RNA (mRNA) nucleotides. This process is called transcription . | The mRNA carries the sequence of its nucleotides to ribosome. The ribosome reads this sequence and joins specific amino acids, according to it, to form protein. This step is known as translation . |

10. What is meant by central dogma?

Ans: Central Dogma:

- (I) The sequence of DNA nucleotides are copied in the form of mRNA.
- (II) Ribosome reads the mRNA sequence of nucleotides and joins specific amino acids.
- (III) Specific protein (structural protein or enzyme) makes the characteristic of the cell and organism.

This whole process is called **central dogma**.

11. What do you mean by loci?

(LHR-II, GUJ-I/II, FSD-I, MUL-I/II, SGD-I/II, DGK-II, SWL-II)

Ans: Loci: The locations or positions of genes on chromosomes are known as loci (Singular locus).

12. Differentiate between gene and Loci.

(LHR-I/II, MUL-I, SGD-I, DGK-I/II, SWL-I/II)

Ans: Gene: Gene is the unit of inheritance. Genes consist of DNA. They contain specific instructions for protein synthesis.

Loci: The locations or positions of genes on chromosomes are known as loci (Singular locus).

13. Define alleles with example.

(LHR-I/II, GUJ-I/II, FSD-I/II, MUL-I, SGD-II, DGK-I, SWL-I)

Ans: Alleles: The alternate forms of a gene are called alleles. If an individual has "Aa" gene pair, 'A' and 'a' are the alleles of one another.

14. What is difference between genes and alleles.

(MTN-GI-II, RWP-GII, SWL-LHR-GI, FSD-GII)

Ans: Genes: The part of DNA (sequence of nucleotides) that contains the instructions for the synthesis of a particular protein is known as a gene. DNA of each chromosome contains thousands of genes.

Alleles: The alternate forms of a gene are called alleles.

15. What is meant by genotype? Write down its types.

[GUJ-I, FSD-I, RWP-II]

Ans: Genotype: The specific combination of genes in an individual is known as genotype. It is of two types i.e. homozygous and heterozygous.

16. Differentiate between homozygous and heterozygous genotype.

(SWL-GI, GUJ-GI, FSD-GI)

Ans: Homozygous Genotype: The genotype in which the gene pair contains two identical alleles (AA or aa) is called homozygous genotype.

Heterozygous Genotype: The genotype in which the gene pair contains two different alleles (Aa), is called heterozygous genotype.

17. What do you mean by Genotype and Phenotype?

(SGD-GI-II, SWL-GI-II, GUJ-GI-II, LHR-GII, FSD-GII, RWP-GI, DGK-GI)

Ans: Genotype: The specific combination of genes in an individual is known as genotype. It is of two types i.e. homozygous and heterozygous.

Phenotype: The expression of genotype in the form of trait (in our example, being albino or having normal pigmentation) is known as the phenotype.

18. What do you mean by dominant and recessive alleles?

(LHR-I/II, FSD-I, DGK-I, SWL-I, MUL-II)

Ans: Dominant allele: When one allele masks or prevents the expression of other allele, it is called dominant allele. The dominant alleles are represented by capital letters.

Recessive Allele: The allele which is not expressed is called recessive allele.

Example: If we have genotype "Aa". In this "A" represents the dominant gene while "a" represents the recessive gene.

Lecture Number 18: (PTB Pg # 98 to 101)

15.3

Mendel's Laws of Inheritance

Mendel's Law of Segregation, Mendel's Law of Independent Assortment

- Which organism has a short but fast life cycle by Mendal?
(A) Ginger (B) Pea (C) Onion (D) Tulip
(FSD-I/II, MUL-I/II, SGD-I/II, DGK-II, SWL-II)
- How many genetically different kinds of gametes an individual with genotype AAbb can produce?
(A) 1 (B) 2 (C) 4 (D) 8
(LHR-I/II, MUL-I, SGD-I, DGK-I/II, SWL-I/II)
- Which scientist presented the law of segregation?
(A) Mendel (B) Newton (C) La-Mark (D) De-Devi
(LHR-I/II, FSD-I, DGK-I, SWL-I, MUL-II)
- In Four O Clock plants, this flower colour is not present:
(A) red (B) pink (C) white (D) black
(LHR-II, GUJ-I/II, FSD-I, MUL-I/II, SGD-I/II, DGK-II, SWL-II)
- Mendel selected a plant:
(A) Pea (B) Rose (C) Cabbage (D) Mustard
(LHR-II, GUJ-I/II, FSD-I, MUL-I/II, SGD-I/II, DGK-II, SWL-II)
- The punnett square is also called:
(A) score board (B) checker board (C) genetic board (D) mendel board
(LHR-I/II, MUL-I, SGD-I, DGK-I/II, SWL-I/II)
- Mendel got the ratio of tall to short plants in F_2 as:
(A) 3 : 1 (B) 2 : 3 (C) 9 : 3 : 3 : 1 (D) 1 : 3 : 9 : 3
(LHR-I/II, FSD-I, DGK-I, SWL-I, MUL-II)

Answers

| | | | |
|------------|----------------------|----------------------|--------------|
| 1. (B) Pea | 2. (A) 1 | 3. (A) Mendel | 4. (D) black |
| 5. (A) Pea | 6. (B) checker board | 7. (C) 9 : 3 : 3 : 1 | |

All Punjab Past Board
Papers

Short Questions
(Subjective Type)

2014 - 2020

- Why Mendel selected Pea plant for his experiment. (SGD-GII, MTN-GI)

Ans: He selected pea plant because;

- Garden pea has short life span and fast life cycle.
- There is presence of several contrasting characters/ sub-characters.
- Cross pollination can be done easily.
- Pea plant is self-pollinated as well as cross pollinated.

- Define Mendel's law of segregation. (GUJ-GI, RWP-GII, LHR-GII)

Ans: **Segregation:** In each organism, the genes are present in pairs. During gamete formation, the genes (alleles) of each pair segregate from each other and each gamete receives one gene from the pair. When the gametes of male and female parents unite, the resulting offspring again gets the genes in pairs. This is known as Law of Segregation.

- Differentiate between monohybrid and dihybrid cross. (MUL-I, SGD-I/II, DGK-II, SWL-II)

Ans: **Monohybrid:** A cross in which only one trait is studied at a time is called monohybrid cross.

Dihybrid Cross: A genetic cross in which two pairs of contrast in traits are studied at a time is called dihybrid cross.

4. Define Mendel's Law of Independent Assortment. (LHR-I/II, FSD-I, DGK-I, SWL-I, MUL-II)

Ans: Law of Independent Assortment: According to Mendel, different traits are inherited independently of one another. This principle is known as the Law of Independent Assortment. Mendel's law of Independent Assortment also states as: "The allele of a gene pair segregate (get separated and distributed to gametes) independently from the allele of other gene pairs."

5. What is "Punnett Square"? (FSD-I/II, MUL-I/II, SGD-I/II, DGK-II, SWL-II)

Ans: Punnett Square: The Punnett square is a diagram that is used to predict an outcome of a particular cross or breeding experiment. It is named after R.C. Punnett (an English mathematician). The gametes of both parents having all possible genetic set-ups are determined.

6. What is the use of checker board? (LHR-II, GUJ-I/II, FSD-I, MUL-I/II, SGD-I/II, DGK-II, SWL-II)

Ans: Use of Checker Board: A checker board is used to cross all the possible gametes of one parent with all the gametes of other parents. In this way, a biologist can find all the possible genotypes of offsprings.

7. What is test Cross? Why it is needed? (LHR-I/II, MUL-I, SGD-I, DGK-I/II, SWL-I/II)

Ans: A genetic cross between a homozygous recessive individual and a corresponding suspected heterozygous to determine the genotype of the latter is called test cross.



Home Work: Syllabus

Exercise

Class Work:

Questions: Multiple Choice Questions (1- 7) (PTB: Pg # 109 - 110)

Home Work:

Short Questions (1-3) Understanding the Concepts (1-3) (PTB: Pg # 110)

Multiple Choice Questions (MCQ's)

- (1) An organism's expressed physical trait, such as seed colour or pod shape, is called its:
 - (a) Genotype
 - (b) Phenotype
 - (c) Karyotype
 - (d) Physical type
- (2) An organism has two different alleles for a single trait. Its genotype is said to be:
 - (a) Homozygous
 - (b) Heterozygous
 - (c) Hemizygous
 - (d) Homologous
- (3) In the cross-pollination between a true-breeding yellow pod plant and a true-breeding green pod plant, where green pod colour is dominant, the resulting off springs (F₁ generation) will be;
 - (a) $\frac{1}{4}$ green, $\frac{3}{4}$ yellow
 - (b) All yellow
 - (c) $\frac{1}{4}$ yellow, $\frac{3}{4}$ green
 - (d) All green
- (4) How many genetically different kinds of gametes an individual with genotype AAbb can produce?
 - (a) 1
 - (b) 2
 - (c) 4
 - (d) 8

(5) Which of the following statements regarding genes is FALSE?

- (a) Genes are located on chromosomes
- (b) Genes consist of a long sequence of DNA
- (c) A gene contains information for the production of a protein
- (d) Determining that information's contained in DNA are for protein synthesis

(6) A purple-flowered pea plant has the genotype PP. Which of the following statements about this plant is FALSE?

- (a) Its phenotype will be white flowers
- (b) It has a homozygous dominant genotype
- (c) When bred to a white-flowered plant, all offspring will be purple flowered
- (d) All the gametes produced will have the same flower colour allele

(7) Mendel's primary contribution to our understanding of inheritance was:

- (a) The idea that genes are found on chromosomes
- (b) Explanation of the patterns of inheritance
- (c) The discovery of alleles
- (d) Determining that information contained in DNA are for protein synthesis

Answers

| | | | |
|--|---|---|----------|
| 1. (b) Phenotype | 2. (b) Heterozygous | 3. (d) All green | 4. (a) 1 |
| 5. (d) Determining that information's contained in DNA are for protein synthesis | 6. (d) All the gametes produced will have the same flower colour allele | 7. (a) The idea that genes are found on chromosomes | |

Short Questions

1. Define genotype and phenotype.

Ans: Genetic makeup of an organism is called genotypes while general appearance of an organism is called phenotype.

2. What do you mean by dominant and recessive alleles?

Ans: The Alleles which suppress the effect of other Alleles called dominant while the other Alleles being suppressed is called recessive Allele.

3. What are the homozygous and heterozygous genotypes?

Ans: The genotype in which identical Alleles of traits are found called homozygous while genotypes that has two different alleles of a trait called heterozygous.

Understanding the Concepts

1. Describe the structure of chromatin.

Ans: For answer see Page # 137 in Al-Ghazali Rehnuma Notes.

2. Describe Mendel's law of segregation.

Ans: For answer see Page # 146 in Al-Ghazali Rehnuma Notes.

3. Explain how Mendel proved the law of independent assortment.

Ans: For answer see Page # 148 in Al-Ghazali Rehnuma Notes.

Note: These are long Questions. For answer consult P.T.B/Al-Ghazali Rahnuma Notes.

Chapter Number
16

Man and His Environment

All Punjab Past Board Papers
2014 - 2020

Smart Syllabus

(16.1) Levels of Ecological Organization, Components of Ecosystem (Pg.113-114)
(16.2) Flow of Materials (Pg.116-117), (16.3) Interactions in Ecosystems (Pg.118-119)
Symbiosis (Parasitism, Mutualism, Commensalism) (Pg.123-125), (16.6) Conservation
of Nature, Basic Information about Dengue Fever (Pg.132-134).

(PTB: Pg # 113 - 114)

Class Work:

Questions: Multiple Choice Questions (1,4,6,7) (PTB: Pg # 135)

Home Work:

Short Questions (1,2,4,5) Understanding the Concepts (1,4) (PTB: Pg # 135-136)

Lecture Number 19: (PTB Pg # 113 to 114)

16.1

Levels of Ecological Organization

All Punjab Past Board
Papers

MCQ's

(Multiple Choice Questions)

2014 - 2020

- Abiotic component of the ecosystem is:** (RWP-GI, SGD-GII, RWP-GII, SGD-GII, MTH)
(A) Producers (B) Herbivores (C) Light (D) Carnivores
- The total amount of living or organic matter in an ecosystem at any time called:** (FSD-I/II, MUL-I/II, SGD-I/II, DGK-II, SWL-II)
(A) biomass (B) energy (C) food chain (D) food web
- All the ecosystems of the world together form the:** (LHR-I/II, FSD-I, DGK-I, SWL-I, MUL-I)
(A) Population (B) Biosphere (C) Community (D) Habitat
- Biosphere is about _____ thick.** (LHR-II, GUJ-I/II, FSD-I, MUL-I/II, SGD-I/II, DGK-II, SWL-II)
(A) 15 kilometres (B) 20 kilometres (C) 25 kilometres (D) 30 kilometres
- _____ is the Abiotic component of Ecosystem.** (LHR-I/II, FSD-I, DGK-I, SWL-I, MUL-I)
(A) Plants (B) Animals (C) Decomposers (D) Water
- _____ is not a biotic factor.** (LHR-II, GUJ-I/II, FSD-I, MUL-I/II, SGD-I/II, DGK-II, SWL-II)
(A) plant (B) animal (C) bacterium (D) soil
- Which one is the abiotic component of the ecosystem is:** (LHR-I/II, FSD-I, DGK-I, SWL-I, MUL-I)
(A) Producers (B) Herbivores (C) Carnivores (D) Air
- Interrelationship between Organisms and their Environment is called:** (FSD-I/II, MUL-I/II, SGD-I/II, DGK-II, SWL-II)
(A) Mycology (B) Physiology (C) Ecology (D) Morphology

Answers

| | | | |
|--------------|----------------|------------------|----------------------|
| 1. (C) Light | 2. (A) biomass | 3. (B) Biosphere | 4. (B) 20 kilometres |
| 5. (D) Water | 6. (D) soil | 7. (D) Air | 8. (C) Ecology |

All Punjab Past Board Papers

Short Questions
(Subjective Type)

2014 - 2020

Define ecology.

(LHR-II, GUJ-I/II, FSD-I, MUL-I/II, SGD-I/II, DGK-II, SWL-II)

1. **Ans: Ecology:** The study of interrelation-ship between organisms and their environment is called "Ecology."

Define species.

(LHR-I/II, GUJ-I/II, FSD-I/II, MUL-I, SGD-II, DGK-I, SWL-I)

2. **Ans: Species:** A species is a group of organisms which can interbreed freely in nature, to produce fertile offspring.

Differentiate between population and community. (LHR-I/II, FSD-I, DGK-I, SWL-I, MUL-II)

3. **Ans: Population:** A group of organisms of the same species inhabiting a specific geographical area (habitat) at a particular time is called population.

Community: All the populations that live in a habitat and interact in various ways with one another are collectively called a community.

What is biosphere?

(GUJ-I/II, MUL-I/II, SGD-I/II, DGK-II, SWL-II)

4. **Ans: Biosphere:** All ecosystems of the world together form the biosphere. It includes all the ecosystems of the planet Earth. In other words, the biosphere consists of all organisms present on the Earth and all regions of the Earth where they live. Biosphere ranges from the floor of oceans to the top of the highest mountains. It is about 20 kilometres thick.

What do you mean by ecosystem.

(LHR-I/II, FSD-I, DGK-I, SWL-I, MUL-II)

5. **Ans: Ecosystem:** The self-sufficient unit of an environment that is formed as a result of interactions between its biotic community and the abiotic components is known as an ecosystem.

What are the different levels of ecological organizations?

(LHR-II, GUJ-I/II, FSD-I, MUL-I/II, SGD-I/II, DGK-II, SWL-II)

6. **Ans:** i) organism ii) species iii) polulation iv) community
v) ecosystem vi) biosphere

Write the name of abiotic and biotic components of ecosystem.

(LHR-I/II, MUL-I, SGD-I, DGK-I/II, SWL-I/II)

7. **Ans:** An ecosystem comprises of two basic components i.e. abiotic components and biotic components.

Abiotic components: The abiotic components include the non-living factors such as light, air, water, soil and the basic elements and compounds present in ecosystem.

Biotic components: The biotic components comprise the living part (organisms) of the ecosystem. Biotic components are further classified as producers, consumers and decomposers.

8. Differentiate between autotrophs and heterotrophs with an example.

(FSD-I/II, MUL-I/II, SGD-I/II, DGK-II, SWL-II)

Ans: Difference between autotrophs and heterotrophs:

| Autotrophs | Heterotrophs |
|--|--|
| 1. These are the organisms which can make their own food. | 1. These are the organisms which cannot make their own food. |
| 2. Plants, algae and photosynthetic bacteria are autotrophs. | 2. All the animals, fungi, protozoans and many of the bacteria are heterotrophs. |

9. What do you mean by producers? What happen if all the producers are eliminated from the ecosystem? (LHR-I/II, MUL-I, SGD-I, DGK-I/II, SWL-I, MU)

Ans: Ecosystem: The producers are the autotrophs present in an ecosystem. Producers include plants, algae and photosynthetic bacteria. These organisms are able to synthesize complex organic compounds (food) from inorganic raw materials. Producers form the basis of any ecosystem. If all the producers are eliminated from an ecosystem, the ecosystem will be destroyed.

10. What do you mean by consumer? Give example. (LHR-I/II, FSD-I, DGK-I, SWL-I, MU)

Ans: Consumer: The consumers are heterotrophs. They cannot synthesize their food and so depend upon producers for food. Consumers include all animals, fungi, protozoa and many of the bacteria. The animals are the major consumers of ecosystems.

11. What are decomposers? Give two examples. (FSD-I/II, MUL-I/II, SGD-I/II, DGK-II, SWL-I)

Ans: Decomposers: Decomposers or reducers break down the complex organic compounds of dead matter (of plants and animals) into simple compounds. They secrete digestive enzymes into dead and decaying plant and animal remains to digest the organic material.

Example: Many types of bacteria and fungi are the principal decomposers of biosphere.

12. Write the difference between biotic and abiotic. (LHR-I/II, FSD-I, DGK-I, SWL-I, MU)

Ans: Biotic Components: The organisms of the ecosystem are called biotic components. There are three types of biotic components called producers, consumers and decomposers.

Abiotic Components: These are the non-living factors present in ecosystem. These include light, air, water, soil and the basic elements and compounds.

13. Write the names of two carnivorous plants. (LHR-I/II, FSD-I, DGK-I, SWL-I, MU)

Ans: The carnivorous plants are those which feed on the small animals like insects. (i) Pitcher plant (ii) Venus flytrap

14. What are Primary Consumers? Give one example. (LHR-I/II, FSD-I, DGK-I, SWL-I, MU)

Ans: Primary consumers: The consumers that directly feed on plants are called primary consumers.

Example: Herbivores e.g. cattle, deer, rabbit, grasshopper etc. are the primary consumers.

15. Define community. (LHR-II, GUJ-I/II, FSD-I, MUL-I/II, SGD-I/II, DGK-II, SWL-I)

Ans: Community: All the populations that live in a habitat and interact in various ways with one another are collectively called community.

16. Define secondary consumers with an example. (LHR-I/II, FSD-I, DGK-I, SWL-I, MU)

Ans: Secondary consumers: The consumers which feed on the primary consumers are called secondary consumers. They are also called primary carnivores.

Example: Fox, frog, predatory birds, many fishes and snakes are secondary consumers.

17. Write down the name of major decomposers of biosphere.

(LHR-I/II, FSD-I, DGK-I, SWL-I, MU)

Ans: Major Decomposers of Biosphere: Decomposers or reducers break down the complex organic compounds of dead matter (of plants and animals) into simple compounds. They secrete digestive enzymes into dead and decaying plant and animal remains to digest the organic material.

Example: Many types of bacteria and fungi are the principal decomposers of biosphere.

18. **What are Carnivores Animals? Give two examples.** (LHR-I/II, FSD-I, DGK-I, SWL-I, MUL-II)
Ans: Carnivores are the consumers which eat only animal flesh. There are three types of carnivores.
 (a) **Primary Carnivores:** Primary carnivores feed on herbivores which include fox, frog, predatory birds, many fishes and snake etc.
 (b) **Secondary Carnivores:** Secondary carnivores feed on primary carnivores which include wolf and owl etc.
 (c) **Tertiary Carnivores:** Tertiary carnivores feed on secondary carnivores which include lion and tiger etc.

Lecture Number 20: (PTB Pg # 116 to 117)

16.2

Flow of Materials and Energy in Ecosystems

| | | |
|------------------------------|--------------------------------------|-------------|
| All Punjab Past Board Papers | MCQ's (Multiple Choice Questions) | 2014 - 2020 |
|------------------------------|--------------------------------------|-------------|

- Which are put in first trophic level?** (LHR-I/II, FSD-I, DGK-I, SWL-I, MUL-II)
 (A) carnivores (B) producers (C) herbivores (D) consumers
- Charles Elton developed the concept of ecological pyramids in:** (LHR-I/II, FSD-I, DGK-I, SWL-I, MUL-II)
 (A) 1924 (B) 1925 (C) 1926 (D) 1927
- Basic source of energy for all ecosystems is:** (LHR-I/II, FSD-I, DGK-I, SWL-I, MUL-II)
 (A) Plants (B) Animals (C) Sun (D) Water
- Is an example of primary consumer:** (GUJ-I/II, MUL-I/II, SGD-I/II, DGK-II, SWL-II)
 (A) Cow (B) snake (C) lion (D) tiger
- Which one is a tertiary consumer:** (LHR-II, GUJ-I/II, FSD-I, MUL-I/II, SGD-I/II, DGK-II, SWL-II)
 (A) Frog (B) Rabbit (C) Deer (D) Lion
- In 1927 an English Ecologist developed the concept of Ecological pyramids:** (LHR-I/II, FSD-I, DGK-I, SWL-I, MUL-II)
 (A) Charles Elton (B) Mendel (C) Darwin (D) Lamarck
- Tertiary consumers is an example of Hawk:** (LHR-I/II, FSD-I, DGK-I, SWL-I, MUL-II)
 (A) sparrow (B) Hawk (C) leaves (D) none of these
- The total amount of living of organic matter in an ecosystem at any time is called:** (LHR-I/II, MUL-I, SGD-I, DGK-I/II, SWL-I/II)
 (A) Energy (B) Population (C) Community (D) Biomass
- Which animal is a Herbivore?** (LHR-I/II, MUL-I, SGD-I, DGK-I/II, SWL-I/II)
 (A) Grasshopper (B) Frog (C) Owl (D) Fox
- When we eat Goat Meat, our Trophic Level is:** (LHR-I/II, FSD-I, DGK-I, SWL-I, MUL-II)
 (A) Primary Consumer (B) Decomposer
 (C) Primary Carnivore (D) Secondary Carnivore

Answers

| | | | |
|--------------------|--------------------------|-------------|----------------|
| 1. (B) producers | 2. (D) 1927 | 3. (C) Sun | 4. (A) Cow |
| 5. (D) Lion | 6. (A) Charles Elton | 7. (B) Hawk | 8. (D) Biomass |
| 9. (A) Grasshopper | 10. (A) Primary consumer | | |

All Punjab Past Board
PapersShort Questions
(Subjective Type)

2014 - 2020

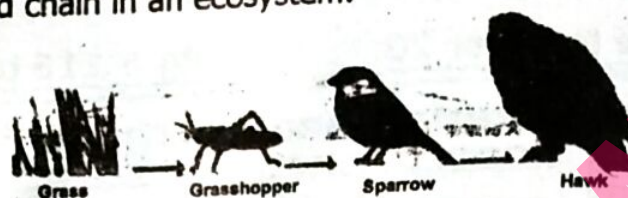
1. What do you mean by trophic level?

(LHR-I/II, FSD-I, DGK-I, SWL-I, MUL-I)

Ans: Trophic level is the level at which an organism feeds in food chain.

2. Define food chain and give an example.

(LHR-I/II, MUL-I, SGD-I, DGK-I/II, SWL-I, MUL-I)

Ans: Food Chain: A food chain is a series of organisms within an ecosystem, in which each organism feeds on the one before it and is fed by the one after it. For example, following is a food chain in an ecosystem:A simple food chain

3. Describe food web.

(SWL-GI-II, GUJ-GII, FSD-GII, RWP-GI, LHR-GI, MTN-GI)

Ans: Food Web: A network of food chains which are interconnected at various trophic levels is called food web. It has a number of feeding connections among different organisms of a community.A food web in grassland ecosystem

4. What is the role of food chain in making food web? (LHR-I/II, FSD-I, DGK-I, SWL-I, MUL-I)

Ans. In nature, food chains are very complex, as one organism may be the food source for many other organisms. Thus, instead of a simple linear food chain, there is a web-like structure formed by these interlinked food chains. Such interconnected food chains collectively make 'food web'. Food web can be defined as, "a network of food chains which are interconnected at various trophic levels."

5. Define biomass.

(LHR-I/II, GUJ-I/II, FSD-I/II, MUL-I, SGD-II, DGK-I, SWL-I)

Ans: Biomass: The total amount of living or organic matter in an ecosystem at any time is called biomass.**Lecture Number 21: (PTB Pg # 122 to 126)**

16.3

Interactions in Ecosystems

Symbiosis (Parasitism, Mutualism, Commensalism)

All Punjab Past Board
Papers

MCQ's

(Multiple Choice Questions)

2014 - 2020

1. Organisms in the ecosystem that are responsible for recycling of plant and animal wastes are:

(LHR-II, GUJ-I/II, FSD-I, MUL-I/II, SGD-I/II, DGK-II, SWL-I)

(A) Producers

(B) Consumers

(C) Decomposers

(D) Competitors

2. Which are decomposers?

- (A) Plants
(C) Algae & Mosses

- (B) Animals
(D) Fungi & Bacteria

(LHR-I/II, MUL-I, SGD-I, DGK-I/II, SWL-I/II)

Example of Ectoparasite is:

- (A) Ascaris (B) Entamoeba

- (C) Lice

(LHR-I/II, FSD-I, DGK-I, SWL-I, MUL-II)

- (D) Plasmodium

The type of symbiosis in which both partners get benefit, is the example of:

- (A) Mutualism

- (B) Competition

- (C) Parasitism

- (D) Predation

(LHR-II, GUJ-I/II, FSD-I, MUL-I/II, SGD-I/II, DGK-II, SWL-II)

The base of food chain is always formed by:

- (A) Animal

- (B) Ecosystem

- (C) Plant (producer)

(LHR-I/II, FSD-I, DGK-I, SWL-I, MUL-II)

- (D) Food web

A network of food chains which are interconnected at various trophic levels is called:

- (A) biomass

- (C) pyramid of biomass

- (B) pyramid of numbers

- (D) food web

(FSD-I/II, MUL-I/II, SGD-I/II, DGK-II, SWL-II)

_____ break down complex organic compound.

- (A) Consumers

- (B) Producers

- (C) Decomposers

- (D) All

(LHR-I/II, FSD-I, DGK-I, SWL-I, MUL-II)

Which carnivores are called top carnivores:

- (A) Primary carnivores

- (C) Tertiary carnivores

- (B) Secondary carnivores

- (D) Producers

(LHR-I/II, MUL-I, SGD-I, DGK-I/II, SWL-I/II)

Example of Endoparasite is:

- (A) Plasmodium

- (B) Mosquito

- (C) Leech

- (D) Louse

(LHR-II, GUJ-I/II, FSD-I, MUL-I/II, SGD-I/II, DGK-II, SWL-II)

10. It is an example of ectoparasite:

- (A) Ascaris

- (B) Mosquito

- (C) Virus

- (D) Bacteria

(LHR-I/II, GUJ-I/II, FSD-I/II, MUL-I, SGD-II, DGK-I, SWL-I)

Answers

| | | | |
|-------------------------|-------------------------|--------------------|----------------------------|
| 1. (C) Decomposers | 2. (D) Fungi & Bacteria | 3. (C) Lice | 4. (A) Mutualism |
| 5. (C) Plant (producer) | 6. (D) food web | 7. (C) Decomposers | 8. (C) Tertiary carnivores |
| 9. (A) Plasmodium | 10. (B) Mosquito | | |

All Punjab Past Board Papers

Short Questions
(Subjective Type)

2014 - 2020

1. Differentiate between intraspecific and interspecific competition.

(FSD-I/II, MUL-I/II, SGD-I/II, DGK-II, SWL-II)

Ans: Difference between Intraspecific Interactions and Interspecific

Interactions:

| Intraspecific Interactions | Interspecific Interactions |
|---|--|
| Interactions between the members of the same species are called Intraspecific Interactions. | Interactions between the members of the different species are called Interspecific Interactions. |

2. Define competition. Give an example.

(LHR-I/II, MUL-I, SGD-I, DGK-I/II, SWL-I/II)

Ans: Competition: A situation in which organisms compete with each other for nutrients,

space, food, water and minerals is called competition. In ecosystems, the natural resources e.g. nutrients, space, etc are usually in short supply. So there is a competition among the organisms of ecosystem for the utilization of resources. Plants show competition for space, light, water and minerals.

3. Define Predation.

(FSD-I/II, MUL-I/II, SGD-I/II, DGK-II, SWL-I/II)

Ans: Predation: Predation is an interaction between two animals of different species between a plant and an animal. In predation, one organism (the predator) attacks and kills and feeds on other organism (the prey).

4. Define Symbiosis.

(LHR-II, GUJ-I/II, FSD-I, MUL-I/II, SGD-I/II, DGK-II, SWL-I/II)

Ans: Symbiosis: Symbiosis is a relationship between members of different species which they live together for longer or shorter periods of time.

Types of symbiosis:

(a) Parasitism (b) Mutualism (c) Commensalism

5. What is the difference between ectoparasite and endoparasite?

(GUJ-I/II, MUL-I/II, SGD-I/II, DGK-II, SWL-I/II)

| Ectoparasites | Endoparasites |
|--|---|
| The ecto-parasites live outside the body of host and feed from their surface. e.g. mosquito. | The endo-parasites live inside the body of the host and get food and shelter. e.g. bacteria, virus etc. |

6. Define commensalism with one example.

(LHR-I/II, MUL-I, SGD-I, DGK-I/II, SWL-I/II)

Ans: It is a type of symbiosis in which one partner is benefited while the other is neither benefited nor harmed. For example: Epiphytes are small plants found growing on other larger plants for spaces only. They absorb water and minerals from the atmosphere and prepare their own food. The larger plants are neither benefited nor harmed in any way.

- a- An epiphyte orchid plant growing on a tree trunk;
- b- A sucker fish attached with shark

7. State the mutual relationship between Sucker fish and Shark.

(LHR-I/II, FSD-I, DGK-I, SWL-I, MUL-I/II)

Ans: Sucker fish attaches to the surface of sharks by its sucker. In this way, the shark provides easy transport to the sucker fish to new feeding grounds.

8. Write names of four consumers.

(GUJ-I/II, MUL-I/II, SGD-I/II, DGK-II, SWL-I/II)

Ans: (I) Cattle (II) Deer (III) Rabbit (IV) Grasshopper

9. What are endoparasites? Write an example.

(LHR-I/II, FSD-I, DGK-I, SWL-I, MUL-I/II)

Ans: Endoparasites: The parasites which live inside the body of host and get food and shelter from there are called endoparasites.

Examples: Bacteria, viruses, etc.

10. Define Parasitism.

(FSD-I/II, MUL-I/II, SGD-I/II, DGK-II, SWL-I/II)

Ans: Parasitism: Parasitism is a type of symbiosis (between members of different species) in which smaller partner (parasite) derives food and shelter from the body of larger partner (host) and in turn, harms it.

11. Define Intraspecific Interactions.

(LHR-I/II, MUL-I, SGD-I, DGK-I/II, SWL-I/II)

Ans: Intraspecific Interactions: Interactions between the members of the same species are called Intraspecific Interactions.

Lecture Number 22: (PTB Pg # 126 to 134)

6.6

Conservation of Nature

Basic Information about Dengue Fever

All Punjab Past Board
Papers

MCQ's

(Multiple Choice Questions)

2014 - 2020

1. **pH of acid rain is:** (LHR-II, GUJ-I/II, FSD-I, MUL-I/II, SGD-I/II, DGK-II, SWL-II)
(A) 2 - 3 (B) 3 - 4 (C) 3 - 5 (D) 3 - 6
2. **250 years ago, the population of world was approximately _____ millions.** (LHR-I/II, MUL-I, SGD-I, DGK-I/II, SWL-I/II)
(A) 400 (B) 500 (C) 600 (D) 700
3. **Dengue fever is a/an _____ infection.** (LHR-I/II, FSD-I, DGK-I, SWL-I, MUL-II)
(A) viral (B) bacterial (C) fungal (D) algal
4. **The R₂ means:** (GUJ-I/II, MUL-I/II, SGD-I/II, DGK-II, SWL-II)
(A) Reduce (B) Reuse (C) Recycle (D) none of these
5. **The R₃ means:** (LHR-II, GUJ-I/II, FSD-I, MUL-I/II, SGD-I/II, DGK-II, SWL-II)
(A) Refuse (B) Reuse (C) Recycle (D) Refuse
6. **Smog forms a yellowish brown haze and hamper visibility during.** (LHR-I/II, FSD-I, DGK-I, SWL-I, MUL-II)
(A) summer (B) spring (C) winter (D) autumn
7. **Which is a non-renewable resource?** (LHR-II, GUJ-I/II, FSD-I, MUL-I/II, SGD-I/II, DGK-II, SWL-II)
(A) Fossil fuel (B) Water (C) Soil (D) Wind
8. **The level of Urbanization in Pakistan was about _____ as per report of World Bank during 1993.** (LHR-I/II, FSD-I, DGK-I, SWL-I, MUL-II)
(A) 27% (B) 32% (C) 37% (D) 40%

Answers

| | | | |
|----------------|---------------|--------------------|--------------|
| 1. (D) 3 - 6 | 2. (C) 600 | 3. (A) viral | 4. (B) Reuse |
| 5. (C) Recycle | 6. (C) winter | 7. (A) Fossil fuel | 8. (B) 32% |

All Punjab Past Board
Papers

Short Questions
(Subjective Type)

2014 - 2020

1. **Differentiate between renewable and non-renewable resources.** (FSD-I/II, MUL-I/II, SGD-I/II, DGK-II, SWL-II)
Ans: Renewable resources: The resources which are replenished or reproduced easily are called renewable resources. e.g. sunlight, air, wind etc.
Non-renewable resources: The resources those are formed over very long periods. The rate of formation of non-renewable resources is extremely slow so cannot be replaced is called non-renewable resources e.g. minerals and fossil fuels. (LHR-I/II, MUL-I, SGD-I, DGK-I/II, SWL-I/II)
2. **What do you mean by 3R?**
Ans: We have to conserve the non-renewable resources because their reserves are limited

and humans are heavily dependent on them for daily needs. The renewable resources too have to be judiciously used. To ensure sustainable use of resources in our environment, we should act upon the principle of 'The 3R' i.e. Reduce, Reuse, and Recycle.

(LHR-I/II, FSD-I, DGK-I, SWL-I, MUL-II)

3. Explain Dengue Fever briefly.

Ans: Dengue fever is a viral infection transmitted through a mosquito *Aedes aegypti*. It has become a major health problem in tropical and sub tropical countries, including Pakistan.

The female aedes mosquito gets the virus when it bites an infected person, virus enter his/her blood and attack white blood cells. Inside WBCs virus reproduce and destroy them. In severe cases, the virus affects liver and bone marrow. As a result there is a decrease in the production of blood platelets and patient suffers from bleeding.

(LHR-I/II, FSD-I, DGK-I, SWL-I, MUL-II)

4. Write down the symptoms of dengue fever.

Ans: Symptoms of dengue fever include high fever, severe headache, pain behind the eyes, muscle and joint pains and rash.

(LHR-I/II, FSD-I, DGK-I, SWL-I, MUL-II)

5. Write down four symptoms of Dengue fever.

Ans: Symptoms of Dengue fever:

- (i) Decrease in the production of blood platelets
- (ii) High fever
- (iii) Severe headache
- (iv) Pain behind the eyes

Home Work: Syllabus

Exercise

Class Work:

Questions: Multiple Choice Questions (1,4,6,7) (PTB: Pg # 135)

Home Work:

Short Questions (1,2,4,5) Understanding the Concepts (1,4) (PTB: Pg # 135-136)

Multiple Choice Questions (MCQ's)

- (1) Which of the following is the abiotic components of the ecosystem?
(a) Producers (b) Herbivores (c) Carnivores (d) Oxygen
- (4) In the food chain three caterpillar robin hawk coyote, which is the secondary consumer?
(a) Caterpillar (b) Robin (c) Hawk (d) Coyote
- (6) In the food chain "grass rabbit fox bear mushroom, "how many types of decomposers are present?
(a) 1 (b) 2 (c) 3 (d) 4
- (7) Organisms in the ecosystem that are responsible for the recycling of plant and animal wastes are:
(a) Producers (b) Consumers (c) Decomposers (d) Competitors

Answers

| | | | | | |
|----|-----------------|---|-----------|---|-------|
| 1 | (d) Oxygen | 4 | (b) Robin | 6 | (a) 1 |
| 7. | (c) Decomposers | | | | |

Short Questions

1. **What are the different levels of ecological organization?**

Ans: Levels of ecological organization are habitat, species, population, community, ecosystem and biosphere.

2. **Define ecosystem and its components.**

Ans: Ecosystem is defined as follows interaction between biotic community and abiotic components is known as ecosystem. The components of ecosystem are biotic and abiotic.

4. **Define food chain and food web.**

Ans: The series of organisms in an ecosystem, in which an organism eats the preceding one and is eaten by the next one called food chain, while a network or interconnected food chain, has a number of feeding connections among different organisms of a community called food web.

5. **What do you mean by the concept of 3Rs with reference to the conservation of natural resources?**

Ans: The concept of 3Rs means reduce, reuse and recycle.

Understanding the Concepts

1. **Explain what do you mean by the pyramids of number and biomass.**

Ans: For answer see Page # 171 in Al-Ghazali Rehnuma Notes.

4. **Write notes on competition, predation and symbiosis.**

Ans: For answer see Page # 178 to 180 in Al-Ghazali Rehnuma Notes.

Note: These are long Questions. For answer consult P.T.B/Al-Ghazali Rahnuma Notes.



Chapter Number
17**Biotechnology**All Punjab Past Board Papers
2014 - 2020**Smart Syllabus**

(17.1) Introduction of Biotechnology (Pg.135), (17.2) Fermentation (1. Alcoholic Fermentation, 2. Lactic acid Fermentation), (17.2.1) Fermentation in Biotechnology Applications of Fermentation (Pg.139-142), (17.3) Genetic Engineering, (17.3.1) Basic Steps in Genetic Engineering, (17.3.2) Achievements of Genetic Engineering -

(PTB: Pg # 144 - 147)

Class Work:

Questions: Multiple Choice Questions (1- 4) (PTB: Pg # 148)

Home Work:

Short Questions (1-3,5) Understanding the Concepts (1,3,4) (PTB: Pg # 148)

Lecture Number 23: (PTB Pg # 138 to 143)**17.1****Introduction of Biotechnology**All Punjab Past Board
Papers**MCQ's**
(Multiple Choice Questions)**2014 - 2020**

- Animal Breeding is a form of:** (LHR-I/II, GUJ-I/II, FSD-I/II, MUL-I, SGD-II, DGK-I, SWL-I)
(A) Pharmacology (B) Cell Biology (C) Biotechnology (D) Morphology
- The term biotechnology was introduced in:** (GUJ-I, FSD-I, DGK-I, SWL-I, MUL-II)
(A) 1680's (B) 1960's (C) 1965's (D) 1970's
- Use of microorganism for the services of mankind is called:** (LHR-I/II, MUL-I, SGD-I, DGK-I/II, SWL-I/II)
(A) vaccine (B) genetic engineering
(C) biotechnology (D) pharmacology
- Human began using microorganism since:** (GUJ-I/II, MUL-I/II, SGD-I/II, DGK-II, SWL-II)
(A) 5000 BC (B) 4000 BC (C) 3000 BC (D) 2000 BC

Answers

- | | | | |
|----------------------|---------------|----------------------|----------------|
| 1. (C) Biotechnology | 2. (D) 1970's | 3. (C) biotechnology | 4. (B) 4000 BC |
|----------------------|---------------|----------------------|----------------|

All Punjab Past Board
Papers**Short Questions**
(Subjective Type)**2014 - 2020**

- Define biotechnology. When insulin was prepared by using bacteria?**

(FSD-I/II, MUL-I/II, SGD-I/II, DGK-II, SWL-II)

Ans: Biotechnology is defined as the use of living organisms in processes for the manufacture of useful products or for services. In 1978, scientists prepared human insulin by inserting the insulin gene in bacteria.

- When and who produced Dolly?**

(GUJ-I, FSD-I, DGK-I, SWL-I, MUL-II)

Ans: In Scotland, in 1997, an embryologist Ian Wilmut produced a sheep (Dolly) from the body cell of an adult sheep.

Describe the scope and importance of biotechnology. (LHR-I/II, FSD-I, DGK-I, SWL-I)

Ans: In recent years, biotechnology is growing as a separate science. It has attracted the attention of many intellectuals from diverse fields like agriculture, medicine, microbiology and organic chemistry. The scope for biotechnology is so wide that it is difficult to recognize the limits.

4. **Write down the role of biotechnology in the field of medicine with example.** (LHR-II, GUJ-I/II, FSD-I, MUL-I/II, SGD-I/II, DGK-II, SWL-II)

Ans: In the field of medicine, biotechnologists synthesized insulin and interferon (antiviral proteins) from bacteria and released for sale. A large number of vaccines and antibodies; human growth hormone and other medicines have also been produced. Various enzymes are being synthesized for medicinal as well as industrial use. Gene therapy (treatment through genes) has become important in recent years. Biotechnology also proved much beneficial in forensic medicine. The study of DNA helps in the identification of criminals.

5. **What are transgenic organisms?** (LHR-I/II, MUL-I, SGD-I, DGK-I/II, SWL-I/II)

Ans: **Transgenic Organisms:** Organisms with modified genetic setup is called transgenic organisms.

6. **Write down two characteristics of transgenic animals.** (GUJ-I, FSD-I, DGK-I, SWL-I)

Ans: Transgenic goats, chickens, cows give more food and milk etc. Many animals like mice, goats, cows etc. have been made transgenic to get medicines through their milk, blood or urine.

7. **For which purposes microbes can be used?** (GUJ-I, FSD-I, DGK-I, SWL-I, MUL-II)

Ans: Microbes are being developed to be used as biopesticides, biofertilizers, biosensors etc. Such transgenic microorganisms are also used for the recovery of metals, cleaning of spilled oils and for many other purposes.

8. **Write down the role of biotechnology to deal with environmental issues.**

(LHR-I/II, MUL-I, SGD-I, DGK-I/II, SWL-I/II)

Ans: Biotechnology is dealing with environmental issues, like pollution control, development of renewable source for energy, restoration of degraded lands and biodiversity conservation. Bacterial enzymes are used to treat sewage water to purify. Microbes are being developed to be used as biopesticides, biofertilizers, biosensors etc. Such transgenic microorganisms are also used for the recovery of metals, cleaning of spilled oils and for many other purposes.

9. **State the role of Biotechnology in the field of Food and Agriculture.**

(GUJ-I/II, MUL-I/II, SGD-I/II, DGK-II, SWL-II)

Ans: **Role of Biotechnology in the field of Food:** Fermented foods (e.g. pickles, yogurt), malted foods (e.g. powdered milk: a mixture of barley, wheat flour and whole milk), various vitamins and dairy products are produced by using microorganisms.

Role of Biotechnology in the field of Agriculture: Plants with modified genetic set-up is called transgenic plants. Transgenic plants are being developed, in which desirable characteristics are present e.g. more yields and resistance against disease, insects and herbicides.

Lecture Number 24: (PTB Pg # 143)

17.2

Fermentation

(Alcoholic Fermentation, Lactic acid Fermentation), Fermentation in Biotechnology, Applications of Fermentation,

All Punjab Past Board
PapersMCQ's
(Multiple Choice Questions)

2014 - 2020

- The correct match for the fermentation product and organism involved is:
(LHR-II, GUJ-I/II, FSD-I, MUL-I/II, SGD-I/II, DGK-II, SWL-II)
(A) Formic acid - *Saccharomyces* (B) Ethanol - *Saccharomyces*
(C) Ethanol - *Aspergillus* (D) glycerol - *Aspergillus*
- Yeast used in alcoholic fermentation is called: (LHR-I/II, MUL-I, SGD-I, DGK-I/II, SWL-I/II)
(A) *Saccharomyces cerevisiae* (B) basidiomyceter
(C) zygomycetes (D) algin
- The process in which there is incomplete-oxidation-reduction of glucose is called: (GUJ-I, FSD-I, DGK-I, SWL-I)
(A) Biotechnology (B) DNA technology
(C) Genetic engineering (D) Fermentation
- The microorganism used in the formation of Ethanol is:
(LHR-I/II, MUL-I, SGD-I, DGK-I/II, SWL-I/II)
(A) E-coli (B) Virus (C) *Bacillus* (D) *Saccharomyces*
- The microorganism used for formation of Farmic acid is: (GUJ-I, FSD-I, DGK-I, SWL-I)
(A) *Saccharomyces* (B) *Bacillus* (C) *Aspergillus* (D) Cocci
- Alcoholic fermentation is carried out by: (GUJ-I, FSD-I, DGK-I, SWL-I, MUL-II)
(A) Virus (B) Bacteria (C) Yeast (D) Algae
- This product is used in the production of soaps: (GUJ-I, FSD-I, DGK-I, SWL-I)
(A) Formic acid (B) Ethanol (C) Glycerol (D) Acrylic acid
- 50 kilogram of yeast produces about _____ tons of protein within 24 hours: (LHR-I/II, MUL-I, SGD-I, DGK-I/II, SWL-I/II)
(A) 100 (B) 150 (C) 200 (D) 250
- The term _____ means the production of any product by the mass culture of micro-organisms. (LHR-I/II, GUJ-I/II, FSD-I/II, MUL-I, SGD-II, DGK-I, SWL-I)
(A) Fermentation (B) Mutation (C) Fermenter (D) Fertilization
- _____ product is used in the production of plastics. (GUJ-I, FSD-I, DGK-I, SWL-I)
(A) glycerol (B) ethanol (C) acrylic acid (D) formic acid
- Glucose molecule is broken into pyruvic acid: (LHR-I/II, MUL-I, SGD-I, DGK-I/II, SWL-I/II)
(A) 5 (B) 3 (C) 2 (D) 6
- This product uses in the production of vinegar and beverages. (GUJ-I, FSD-I, DGK-I, SWL-I)
(A) Formic Acid (B) Acrylic Acid (C) Ethanol (D) Glycerol

13. **Lactic acid fermentation takes place by:** (LHR-I/II, MUL-I, SGD-I, DGK-I/II, SWL-I/II)
 (A) Algae (B) Yeast (C) Virus (D) Bacteria
14. **Aspergillus produces:** (LHR-I/II, GUJ-I/II, FSD-I/II, MUL-I, SGD-II, DGK-I, SWL-I)
 (A) Formic Acid (B) Ethanol (C) Glycerol (D) Acrylic Acid
15. **The micro-organism used for the production of formic acid is:** (LHR-I/II, MUL-I, SGD-I, DGK-I/II, SWL-I/II)
 (A) bacillus (B) E.Coli (C) aspergillus (D) sacchromyces
16. **Yogurt is made from milk fermentation by:** (GUJ-I, FSD-I, DGK-I, SWL-I)
 (A) *Saccharomyces* (B) Lactic acid bacteria
 (C) Yeast (D) Bacillus
17. **The design and arrangements for continuous fermentation are:** (GUJ-I, FSD-I, DGK-I, SWL-I)
 (A) complex (B) simple (C) impossible (D) un-complicated
18. **Alcoholic Fermentation is carried out by:** (LHR-I/II, MUL-I, SGD-I, DGK-I/II, SWL-I/II)
 (A) Virus (B) Aspergillus (C) Fungi (D) Yeast

Answers

| | | | |
|---------------------------------------|--|---------------------|-----------------------------|
| 1. (B) Ethanol - <i>Saccharomyces</i> | 2. (A) <i>Saccharomyces cerevisiae</i> | 3. (D) Fermentation | 4. (D) <i>Saccharomyces</i> |
| 5. (C) Aspergillus | 6. (C) Yeast | 7. (C) Glycerol | 8. (D) 250 |
| 9. (A) Fermentation | 10. (C) acrylic acid | 11. (C) 2 | 12. (C) Ethanol |
| 13. (D) Bacteria | 14. (A) Formic Acid | 15. (C) aspergillus | 16. (D) Bacillus |
| 17. (A) complex | 18. (D) Yeast | | |

All Punjab Past Board
Papers

Short Questions
(Subjective Type)

2014 - 2020

1. **Define Fermentation? Write the names of two basic types of fermentation.** (LHR-I/II, MUL-I, SGD-I, DGK-I/II, SWL-I/II)

Ans: Fermentation is a process in which there is incomplete oxidation-reduction of glucose. The names of two basic types of fermentation are given below.

- (i) Alcoholic fermentation (by yeast)
- (ii) Lactic acid fermentation (by bacteria)

2. **Write down the role of pasture in the field of fermentation.** (GUJ-I, FSD-I, DGK-I, SWL-I, MUL-II)

Ans: In 1857, pasteur convinced the scientific community that all fermentations are the results of microbial activity. He showed that fermentation is always accompanied by the development of microorganisms. There are many kinds of fermentations and each kind is a characteristic of particular microbial group.

3. **Define Alcoholic Fermentation.** (FSD-I/II, MUL-I/II, SGD-I/II, DGK-II, SWL-II)

Ans: Alcoholic Fermentation: Fermentation is carried out by many types of yeast such as *Saccharomyces Cerevisiae*. This process is quite important and is used to produce

bread, beer, wine and distilled spirits. In this process, carbon dioxide is removed from pyruvic acid. The product i.e. acetaldehyde is then reduced to ethanol. The carbon dioxide produced during this fermentation causes the rise of the bread.

4. Define Lactic Acid fermentation. Give its use in dairy industry.

(LHR-I/II, GUJ-I/II, FSD-I/II, MUL-I, SGD-II, DGK-I, SWL-II)

Ans: In this process, pyruvic acid is reduced to lactic acid. It is carried out by many bacteria e.g. *Streptococcus* and many *Lactobacillus* species. It is quite important in dairy industry where it is used for souring milk and also for production of various types of cheese.

5. Write down the name of carbohydrate fermentation. (GUJ-I, FSD-I, DGK-I, SWL-I, MUL-II)

Ans: There are two types of carbohydrate fermentation:

- (I) alcoholic fermentation (by yeast)
- (II) Lactic acid fermentation (by bacteria)

6. How fermentation take place through yeast? (GUJ-I/II, MUL-I/II, SGD-I/II, DGK-II, SWL-II)

Ans: This fermentation is carried out by many types of yeast such as *Saccharomyces cerevisia*. This process is quite important and is used to produce bread, beer, wine and distilled spirits. In this process, carbon dioxide is removed from pyruvic acid. The product i.e. acetaldehyde is then reduced to ethanol. The carbon dioxide produced during this fermentation causes the rise of the bread.

7. Write down two application of fermentation. (GUJ-I, FSD-I, DGK-I, SWL-I, MUL-II)

Ans: (I) **Fermented food:** Fermentation often makes the food more nutritious, more digestible and tastier. It also tends to preserve the food, lowering the need for refrigeration. The following groups are included in the fermented foods.

(II) Industrial Products:

| Products | Microorganisms used | Some uses |
|--------------|----------------------|--|
| Formic acid | <i>Aspergillus</i> | Used in textile dyeing, leather treatment, electroplating, rubber manufacture. |
| Ethanol | <i>Saccharomyces</i> | Used as solvent; used in the production of vinegar and beverages. |
| Glycerol | <i>Saccharomyces</i> | used as solvent; used in the production of plastics, cosmetics and soaps; used in printing; used as a sweetener. |
| Acrylic acid | <i>Bacillus</i> | Used in the production of plastics. |

8. Describe the advantages of fermented food. (LHR-I/II, MUL-I, SGD-I, DGK-I/II, SWL-II)

Ans: Fermentation often makes the food more nutritious, more digestible and tastier. It also tends to preserve the food, lowering the need for refrigeration. The following groups are included in the fermented foods.

9. Define glycolysis. (LHR-II, GUJ-I/II, FSD-I, MUL-I/II, SGD-I/II, DGK-II, SWL-II)

Ans: **Glycolysis:** Glycolysis is a process, in which the glucose molecule is broken into two molecules of pyruvic acid. Different microorganisms proceed the further reactions in different ways.

10. Write down two uses of formic acid. (LHR-I/II, FSD-I, DGK-I, SWL-I, MUL-II)

Ans: **Uses of Formic Acid:** Used in textile dyeing, leather treatment, electroplating, rubber manufacture.

11. Write down the name of four industrial products produced through fermentation. (FSD-I/II, MUL-I/II, SGD-I/II, DGK-II, SWL-II)

Ans: (i) formic acid (ii) ethanol (iii) glycerol (iv) acrylic acid

12. Write some uses of glycerol. (LHR-I/II, GUJ-I/II, FSD-I/II, MUL-I, SGD-II, DGK-I, SWL-I)

Ans: 1. It is used as solvent.
2. It is used in the production of plastics, cosmetics and soaps.
3. It is used in printing.
4. It is used as sweetener

13. What are fermenter?

Ans: **Fermenter:** Fermenter is a device that provides optimum environment to microorganisms to grow into a biomass, so that they can interact with a substrate, forming the product. [DGK-II, MUL-II, SWL-I, SGD-I/II, FSD-I, DGK-I]

14. Write down the advantages of using fermenter.

Ans: A fermenter optimizes the growth of the organisms by controlling many factors like nutrients, oxygen, growth inhibitors, pH and temperature. [SWL-I/II, BWP-I, DGK-I/II, MLT-II, GUJ-II, SGD-I/II, IIRWP-I]

A fermenter may hold several thousand litres of the growth medium. So, fermenters allow the production of materials in bulk quantities. Massive amounts of medicines, insulin, human growth hormone and other proteins are being produced in fermenters and this production proves much inexpensive.

15. What do you know about batch fermentation? (GUJ-I, FSD-I, DGK-I, SWL-I, MUL-II)

Ans: **Fermentation:** In this process, the tank of fermenter is filled with the raw materials to be fermented. The temperature and pH for microbial fermentation is properly adjusted, and nutritive supplements are added. All the material is steam sterilized. The pure culture of microorganisms is added to fermenter from a separate vessel. Fermentation proceeds and after the proper time the contents of fermenter are taken out. Fermenter is cleaned and the process is repeated. Thus, fermentation is a discontinuous process divided into batches.

16. What do you know about continuous fermentation process?

Ans: **Continuous Fermentation:** In this process, the substrate is added to fermenter continuously at a fixed rate. This maintains the microorganisms in growth phase. Fermentation products are taken out continuously. (GUJ-I/II, MUL-I/II, SGD-I/II, DGK-II, SWL-II)

17. Describe dairy products in fermentation. (LHR-I/II, MUL-I, SGD-I, DGK-I/II, SWL-I/II)

Ans: **Dairy Products:** Cheese and yogurt are important fermentation products. Cheese is formed when a milk protein is coagulated. This happens when the acid produced by lactic acid bacteria reacts with milk protein. Yogurt is made from milk by different lactic acid bacteria.

18. How cheese is formed? (GUJ-I, FSD-I, DGK-I, SWL-I, MUL-II)

Ans: Cheese is formed when a milk protein is coagulated. This happens when the acid produced by lactic acid bacteria reacts with milk protein.

19. Define glycolysis and name its one product.

(LHR-I/II, FSD-I, DGK-I, SWL-I, MUL-I)

Ans: Glycolysis is a process, in which the glucose molecule is broken into two molecules of pyruvic acid. Different microorganisms proceed the further reactions in different ways.

20. What are the products of the two types of carbohydrates fermentation.

(GUJ-I/II, MUL-I/II, SGD-I/II, DGK-II, SWL-II)

Ans: (I) Acoholic Fermentation

(II) Lactic Acid Fermentation

21. What is Fermenter? Write down the names of two ways of fermentation carried out in fermenters.

(LHR-I/II, MUL-I, SGD-I, DGK-I/II, SWL-I)

Ans: Fermenter is a device that provides optimum environment to microorganisms to grow into a biomass, so that they interact with a substrate forming the product.

Fermentation has two types as follows.

(1) Batch Fermentation.

(2) Continuous Fermentation.

22. What is the meaning of fermentation in biotechnology?

(GUJ-I, FSD-I, DGK-I, SWL-I, MUL-I)

Ans: Fermentation: Fermentation is a process in which there is incomplete oxidation-reduction of glucose. Fermentation has been in the knowledge of man since centuries, but it was believed that it is purely a chemical process.

The names of two basic types of fermentation are given below:

(i) Alcoholic fermentation (by yeast)

(ii) Lactic acid fermentation (by bacteria)

23. Write down the application of fermentation in beverage products.

[RWP-I, GUJ-I]

Ans: Application of fermentation in beverage products: Beer is produced from cereal grains which have been malted, dried and ground into fine powder. Fermentation of the powder is done by yeast. This process breaks the glucose present in powder into pyruvic acid and then into ethanol. Grapes can be directly fermented by yeasts to wine.

24. Write Dairy products by fermentation.

(GUJ-I, FSD-I, DGK-I, SWL-I, MUL-I)

Ans: Dairy Products: Cheese and yogurt are important fermentation products. Cheese is formed when a milk protein is coagulated. This happens when the acid produced by lactic acid bacteria reacts with milk protein. Yogurt is made from milk by different lactic acid bacteria.

25. What is the use of fermentation in cereal products?

(LHR-I/II, FSD-I, DGK-I, SWL-I)

Ans: Fermentation in Cereal Products: Bread is the commonest type of fermented cereal product. Wheat dough is fermented by *S.cerevisiae* along with some lactic acid bacteria.

Lecture Number 25: (PTB Pg # 143 to 147)

Genetic Engineering

17.3

Basic Steps in Genetic Engineering , Achievements of Genetic Engineering

All Punjab Past Board
PapersMCQ's
(Multiple Choice Questions)

2014 - 2020

When did scientists become able to cut and paste the DNA?

(GUJ-I, FSD-I, DGK-I, SWL-I, MUL-II)

- (A) 1940s (B) 1920s (C) 1970s (D) 1930s

Interferones _____ are proteins.

(GUJ-I/II, MUL-I/II, SGD-I/II, DGK-II, SWL-II)

- (A) against bacteria (B) against virus (C) against fungi (D) against drugs

Insuline was prepared by inserting insulin gene in bacteria:

(GUJ-I, FSD-I, DGK-I, SWL-I, MUL-II)

- (A) 1978 (B) 1980 (C) 1982 (D) 1984

In glycolysis glucose molecule breaks into two molecules of:

(SGD-GII, SWL-GI, SGD-GI)

- (A) Formic acid (B) Lactic acid (C) Pyruvic acid (D) Acetic acid

Patients of which disease use insulin:

(LHR-I/II, FSD-I, DGK-I, SWL-I, MUL-II)

- (A) Cancer (B) Aids (C) Hepatitis (D) Diabetes

Glycerol is used in:

(GUJ-I, FSD-I, DGK-I, SWL-I, MUL-II)

- (A) printing (B) vinegar (C) beverages (D) textile dyeing

The complete map of human genome was presented in:

(SWL-GII, MTN-GII, FSD-GI)

- (A) 1978 (B) 1990 (C) 2002 (D) None of these

The enzyme which is used to dissolve blood clots is:

(MTN-GII, RWP-GI)

- (A) Beta-endorphin (B) Thymosin (C) Interferon (D) Urokinase

Treatment through genes is called:

(GUJ-I/II, MUL-I/II, SGD-I/II, DGK-II, SWL-II)

- (A) Gene therapy (B) Radio therapy
(C) Physico therapy (D) Chemotherapy

When was the work on Genetic Engineering started:

(GUJ-I, FSD-I, DGK-I, SWL-I, MUL-II)

- (A) 1930 (B) 1940 (C) 1944 (D) 1970

E-coli bacterium was created in:

(GUJ-I/II, MUL-I/II, SGD-I/II, DGK-II, SWL-II)

- (A) 1980 (B) 1975 (C) 1977 (D) 1970

Organisms with modified genetic set-up are called:

(GUJ-I, FSD-I, DGK-I, SWL-I, MUL-II)

- (A) Hybrid (B) Transgenic (C) Transformed (D) Rearranged

In cattle, goats and deer, the foot and mouth disease is:

(GUJ-I, FSD-I, DGK-I, SWL-I, MUL-II)

- (A) bacterial (B) viral (C) fungal (D) non of these

In genetic engineering plasmid is used as:

(LHR-II, GUJ-I/II, FSD-I, MUL-I/II, SGD-I/II, DGK-II, SWL-II)

- (A) Donor (B) Ligase (C) Endonuclease (D) Vector

Human Insuline Gene was transferred into:

(LHR-I/II, FSD-I, DGK-I, SWL-I, MUL-II)

- (A) Algae (B) Virus (C) Bacteria (D) Yeast

16. The enzyme works as breaking enzyme: (GUJ-I/II, MUL-I/II, SGD-I/II, DGK-II, SWL-II)
 (A) Ligase (B) Amylase (C) Endonuclease (D) Lipase
17. Dolly is the name of a: (LHR-I/II, MUL-I, SGD-I, DGK-I/II, SWL-I/II)
 (A) Rabbit (B) Flower (C) Mouse (D) Sheep

Answers

| | | | |
|---------------------|----------------------|------------------|----------------------|
| 1. (C) 1970s | 2. (B) against virus | 3. (A) 1978 | 4. (C) Pyruvic acid |
| 5. (D) Diabetics | 6. (A) printing | 7. (C) 2002 | 8. (D) Urokinase |
| 9. (A) Gene therapy | 10. (C) 1944 | 11. (C) 1977 | 12. (B) Transgenic |
| 13. (B) viral | 14. (D) Vector | 15. (C) Bacteria | 16. (C) Endonuclease |
| 17. (D) Sheep | | | |

All Punjab Past Board
Papers

Short Questions
(Subjective Type)

2014 - 2020

1. Define genetic engineering. (LHR-GI-II, GUJ-GI, DGK-GI-II, BWP-GI)

Ans: Genetic engineering or recombinant DNA technology involves the artificial synthesis, modification, removal, addition and repair of the genetic material (DNA). Genetic engineering developed in the mid- 1970s when it became possible to cut DNA and to transfer particular pieces of DNA from one type of organism into another.

2. What do you mean by recombinant DNA? (FSD-I/II, MUL-I/II, SGD-I/II, DGK-II, SWL-II)

Ans: Recombinant DNA: The vector DNA and the attached gene of interest are collectively called recombinant DNA.

3. Write down the objectives of genetic engineering. (GUJ-I, FSD-I, DGK-I, SWL-I, MUL-II)

Ans: The important objectives of genetic engineering are as follows:

- (i) Isolation of a particular gene or part of a gene for various purposes such as gene therapy.
- (ii) Production of particular RNA and protein molecules.
- (iii) Improvement in the production of enzymes, drugs and commercially important organic chemicals.
- (iv) Production of varieties of plants having particular desirable characteristics.
- (v) Treatment of genetic defects in higher organism.

4. How gene of interest can be isolated? (LHR-I/II, MUL-I, SGD-I, DGK-I/II, SWL-I/II)

Ans: In the first step, the genetic engineer identifies the gene of interest in a donor organism. Special enzymes, called restriction endonucleases, are used to cut the identified gene from the total DNA of donor organism.

5. Which enzymes are used to cut and join the gene. (LHR-I/II, FSD-I, DGK-I, SWL-I, MUL-II)

Ans: Gene of interest in a donor organism are cut with special enzymes, called restriction endonucleases while for joining the genes, ligase (joining enzymes) are used.

6. How gene is entered into a vector? (GUJ-I/II, MUL-I/II, SGD-I/II, DGK-II, SWL-II)

Ans: A vector is selected for the transfer of the isolated gene of interest to the host cell. The vector may be a plasmid (the extra-chromosomal DNA present in many bacteria) or a bacteriophage. The gene of interest is attached with the vector DNA by using

endonuclease (breaking enzymes) and ligase (joining enzymes). The vector DNA and the attached gene of interest are collectively called recombinant DNA.

7. **GMO is stand for?**

(LHR-I/II, MUL-I, SGD-I, DGK-I/II, SWL-I/II)

Ans: GMO stand for "Genetically modified organism".

8. **Write any two achievements of genetic engineering.** (GUJ-I, FSD-I, DGK-I, SWL-I, MUL-II)

Ans: (i) **Cure of blood Diseases:**

1. Genetic engineering techniques can be used to cure blood diseases like thalassemia and sickle-cell anaemia, which result from defects in single genes. Normal genes could be transferred into the bone marrow.

2. **Production of Human Growth Hormone:**

In 1977 an E-coli bacterium was created that was capable of synthesizing the human growth hormone.

9. **What are thymosin and beta-endorphin.**

(LHR-I/II, MUL-I, SGD-I, DGK-I/II, SWL-I/II)

Ans: Thymosin: Thymosin is a hormone which may prove effective against brain and lung cancer has been produced by genetically modified microorganisms.

Beta-endorphin: It is a pain killer produced by the brain, has also been produced by genetic engineering techniques.

10. **From when and which organism human growth hormone are produced?**

(FSD-I/II, MUL-I/II, SGD-I/II, DGK-II, SWL-II)

Ans: In 1977 an E.coli bacterium was created that was capable of synthesizing the human growth hormone.

11. **What do you mean by Interferons?**

(LHR-I/II, MUL-I, SGD-I, DGK-I/II, SWL-I/II)

Ans: Interferons: Interferons are anti-viral proteins produced by cells infected with viruses. In 1980, interferon was produced in the genetically modified microorganisms, for the first time.

12. **What is urokinase? Write down its function.** (FSD-I/II, MUL-I/II, SGD-I/II, DGK-II, SWL-II)

Ans: Urokinase: It is obtained by genetically modified microorganism. It is used to dissolve the blood clots.

13. **What are transgenic plants and animals?**

(LHR-I/II, FSD-I, DGK-I, SWL-I, MUL-II)

Ans: Transgenic plants: Plants with modified genetic set-up is called transgenic plants. Transgenic plants are being developed, in which desirable characteristics are present e.g. more yields and resistance against disease, insects and herbicides.

Transgenic animal: Organisms with modified genetic set-up is called transgenic animal.

14. **Write the function of hormone thymosin.**

(GUJ-I/II, MUL-I/II, SGD-I/II, DGK-II, SWL-II)

Ans: Thymosin: Thymosin hormone is produced by genetically modified microorganisms.

Function of thymosin hormone: It is effective against brain and lung cancer.

15. **What is meant by expression of genes of interest?**

(LHR-I/II, MUL-I, SGD-I, DGK-I/II, SWL-I/II)

Ans: Genetically modified organism contains the gene of interest and manufactures the desired product, which can be isolated from culture medium.

Home Work: Syllabus

Exercise

Class Work:

Questions: Multiple Choice Questions (1- 4) (PTB: Pg # 148)

Home Work:

Short Questions (1-3,5) Understanding the Concepts (1,3,4) (PTB: Pg # 148)

Multiple Choice Questions (MCQ's)

- (1) Find the correct match for the fermentation product and the organisms involved.

| | |
|--|------------------------------------|
| (a) Formic acid - <i>Saccharomyces</i> | (b) Ethanol - <i>Saccharomyces</i> |
| (c) Ethanol - <i>Aspergillus</i> | (d) Glycerol - <i>Aspergillus</i> |
- (2) Which one is NOT an objective of genetic engineering?
 - (a) Production of cheese and yogurt by lactic acid bacteria
 - (b) Isolation of a particular gene or part of a gene
 - (c) Production of RNA and protein molecules
 - (d) Correction of genetic defects in higher organisms
- (3) Which of these is an anti-viral protein?

| | | | |
|---------------|--------------|-------------|----------------|
| (a) Urokinase | (b) Thymosin | (c) Insulin | (d) Interferon |
|---------------|--------------|-------------|----------------|
- (4) The first step in genetic engineering is:
 - (a) Growth of the genetically modified organism
 - (b) Transfer of the Recombinant DNA into the host organism
 - (c) Isolation of the gene of interest
 - (d) Insertion of gene in a vector

Answers

| | | | |
|----|------------------------------------|----|---|
| 1. | (b) Ethanol - <i>Saccharomyces</i> | 2. | (a) Production of cheese and yogurt by lactic acid bacteria |
| 3. | (d) Interferon | 4. | (c) Isolation of the gene of interest |

Short Questions

1. How would you define fermentation with reference to biotechnology?

Ans: In Biotechnology fermentation means the production of any product by the mass culture of Micro organisms is called Fermentation.

2. Name any two industrial products made by fermentation. Also describe their uses in the industry.

Ans: (i) Cereal Products. (ii) Dairy Products.

3. What are the products of the two types of carbohydrate fermentation?

Ans: (i) Alcoholic Fermentation, e.g. Acetaldehyde is reduced to Ethanol.

(ii) Lactic Acid Fermentation, e.g. Production of various types of Cheese by milk.

5. In biotechnology, what is meant by Genetically Modified Organism (GMO)?
How is it made?

Ans: GMO are provided suitable culture medium for growth to give as much copies of interest as needed.

Understanding the Concepts

1. Define biotechnology and describe its importance.

Ans: For answer see **Page # 199** to 200 in Al-Ghazali Rehnuma Notes.

3. Describe the achievement of genetic engineering in medicine, agriculture and environment.

Ans: For answer see **Page # 213** in Al-Ghazali Rehnuma Notes.

4. What basic steps a genetic engineer adopts during the manipulation of genes?

Ans: For answer see **Page # 212** in Al-Ghazali Rehnuma Notes.

Note: These are long Questions. For answer consult **P.T.B/Al-Ghazali Rahnuma** Notes.

.....◆◆◆.....

MDCATUSTAR.COM

Chapter Number
18**Pharmacology**All Punjab Past Board Papers
2014 - 2020**Smart Syllabus**

(18.1) Medicinal Drugs (Pg. 150-151), (18.2) Addictive Drugs, Sedatives, Narcotics, Hallucinogens, Drug Addiction and Associated problems, (18.3) Antibiotics and Vaccines, (18.3.1) Antibiotics, Antibiotic Resistance, Vaccines, Mode of Action of Vaccines - (PTB: Pg # 153 - 156)

Class Work:

Questions: Multiple Choice Questions (1- 8) (PTB: Pg # 157)

Home Work:

Short Questions (1,2,4,5) Understanding the Concepts (1-5) (PTB: Pg # 157-158)

Lecture Number 26: (PTB Pg # 150 to 156)**18.1****Medicinal Drugs , Addictive Drugs****18.2**

Sedatives, Narcotics, Hallucinogens, Drug Addiction and Associated problems

All Punjab Past Board
Papers**MCQ's**

(Multiple Choice Questions)

2014 - 2020

- The drugs used to reduce the pain are known as: (GUJ-I, FSD-I, DGK-I, SWL-I, MUL-II)
(A) Antibiotics (B) Antiseptics (C) Sedatives (D) Analgesics
- Reduce the possibility of infections of skin: (LHR-I/II, FSD-I, DGK-I, SWL-I, MUL-II)
(A) Analgesics (B) Antibiotics (C) Disinfectants (D) Antiseptics
- The pain reliever morphine is obtained from the flowers of which plant? (LHR-II, GUJ-I/II, FSD-I, MUL-I/II, SGD-I/II, DGK-II, SWL-II)
(A) Brassica (B) Rose (C) Foxglove (D) Opium
- Which of the following drugs is obtained from plants? (GUJ-I, FSD-I, DGK-I, SWL-I, MUL-II)
(A) Aspirin (B) Opium (C) Digitalis (D) Insulin
- Joseph Lister introduced an acid to sterilise the surgical instruments and to clean wounds: (LHR-II, GUJ-I/II, FSD-I, MUL-I/II, SGD-I/II, DGK-II, SWL-II)
(A) Carbonic acid (B) Acetic acid (C) Nitric acid (D) Carbolic acid
- Medicines prepared in laboratory are called: (LHR-I/II, FSD-I, DGK-I, SWL-I, MUL-II)
(A) Synthetic (B) Plants-made (C) Animals-made (D) Minerals-made
- Streptomycin is obtained from: (GUJ-I, FSD-I, DGK-I, SWL-I, MUL-II)
(A) Fungi (B) Algae (C) Bacteria (D) Foxglove
- Pathogens contain special proteins called: (GUJ-I/II, MUL-I/II, SGD-I/II, DGK-II, SWL-II)
(A) Antigens (B) Antibodies (C) Antibiotics (D) Antiseptics
- Mescaline is obtained from a plant: (GUJ-I/II, MUL-I/II, SGD-I/II, DGK-II, SWL-II)
(A) Opium (B) Cactus (C) Maize (D) Brassica

10. It is prepared from opium: (LHR-II, GUJ-I/II, FSD-I, MUL-I/II, SGD-I/II, DGK-II, SWL-II)
 (A) Vaccine (B) Aspirin (C) Morphine (D) Paracetamol
11. Which drugs is produced from minerals? (LHR-I/II, FSD-I, DGK-I, SWL-I, MUL-II)
 (A) tuncture of Iodine (B) musk
 (C) opium (D) streptomycin
12. Medicines which induce sedation by reducing irritability and excitement are called: (GUJ-I, FSD-I, DGK-I, SWL-I, MUL-II)
 (A) analgesics (B) antibiotics (C) sedatives (D) vaccines
13. Aspirin is categorised as: (LHR-II, GUJ-I/II, FSD-I, MUL-I/II, SGD-I/II, DGK-II, SWL-II)
 (A) A drug from minerals (B) A drug from plants
 (C) A drug from animals (D) A synthetic drug
14. Which of the following drugs is obtained from plants: (GUJ-I, FSD-I, DGK-I, SWL-I, MUL-II)
 (A) Aspirin (B) Opium (C) Cephalosporin (D) Insuline
15. Hallucinogens affect on the: (GUJ-I/II, MUL-I/II, SGD-I/II, DGK-II, SWL-II)
 (A) Sympathetic Nervous System (B) Central Nervous System
 (C) Spinal Card (D) Hypothalamus
16. Some drugs often make persons dependent on them, are called: (GUJ-I, FSD-I, DGK-I, SWL-I, MUL-II)
 (A) sedative (B) addictive (C) antibiotic (D) analgesics
17. The cardiotonic used to stimulate the heart is called: (LHR-II, GUJ-I/II, FSD-I, MUL-I/II, SGD-I/II, DGK-II, SWL-II)
 (A) aspirin (B) digitalis (C) paracetamol (D) analgesics
18. Micro organisms found on non-living objects are destroyed by: (GUJ-I/II, MUL-I/II, SGD-I/II, DGK-II, SWL-II)
 (A) antiseptics (B) disinfectants (C) antibiotics (D) analgesics
19. Digitalis stimulate the organ: (LHR-II, GUJ-I/II, FSD-I, MUL-I/II, SGD-I/II, DGK-II, SWL-II)
 (A) Brain (B) Heart (C) Kidney (D) Lungs
20. Mescaline belongs to: (FSD-I/II, MUL-I/II, SGD-I/II, DGK-II, SWL-II)
 (A) Antibiotics (B) Vaccine (C) Sulpha drugs (D) Hallucinogens
21. He prompted the Idea of Sterile Surgery for the first time: (GUJ-I, FSD-I, DGK-I, SWL-I, MUL-II)
 (A) Joseph Trot (B) Joseph Fisher (C) Joseph Lister (D) Joseph Espdin
22. Expired drugs can cause damage to: (LHR-I/II, MUL-I, SGD-I, DGK-I/II, SWL-I/II)
 (A) lungs (B) heart (C) kidneys (D) stomach

Answers

| | | | |
|----------------------|--------------------|----------------------------|-------------------|
| 1. (D) Analgesics | 2. (D) Antiseptics | 3. (D) Opium | 4. (B) Opium |
| 5. (D) Carbolic acid | 6. (A) Synthetic | 7. (C) Bacteria | 8. (A) Antigens |
| 9. (B) Cactus | 10. (C) Morphine | 11. (A) tuncture of iodine | 12. (C) sedatives |

| | | | |
|--------------------------|-----------------------|------------------------------------|-----------------------|
| 13. (D) A synthetic drug | 14. (B) Opium | 15. (A) Sympathetic Nervous System | 16. (B) addictive |
| 17. (B) digitalis | 18. (B) disinfectants | 19. (B) Heart | 20. (D) Hallucinogens |
| 21. (C) Joseph Lister | 22. (C) kidneys | | |

All Punjab Past Board Papers

Short Questions

(Subjective Type)

2014 - 2020

1. From which sources drugs are obtained?

(LHR-I/II, MUL-I, SGD-I, DGK-I/II, SWL-I/II)

Ans: Sources of drugs are:

- (i) Synthetic drugs.
- (ii) Drugs from plants and fungi.
- (iii) Drugs from animals.
- (iv) Drugs from minerals.
- (v) Drugs from bacteria.

2. What are synthetic drugs?

(GUJ-GII, DGK-GII, SGD-GI, RWP-GII)

Ans: Synthetic Drugs: Synthetic drugs do not occur naturally but are synthesized in laboratory. Pharmaceutical companies produce these drugs e.g aspirin.

3. Write about some drugs from plants and fungi.

(LHR-GII, RWP-GI-II, DGK-GI)

Ans: Many important medicines are obtained from plants and fungi. These medicines include antibiotics, cardiotonics and certain analgesics. The antibiotic penicillin comes from a fungus. The cardiotonic, known as digitalis, is used to stimulate the heart. It is made from the leaves of purple flowered plant, foxglove.

4. Write about drugs obtained from animal sources.

(LHR-II, MUL-I, DGK-I, SGD-II, RWP-II, MUL-II)

Ans: Drugs from animals: Drugs obtained from animals are usually their glandular products. Fish liver oils, musk, bees wax, certain hormones and antitoxins are obtained from animal sources.

5. Explain with examples the drugs obtained from mineral sources.

(GUJ-II, SGD-I, DGK-II, RWP-II)

Ans: Drugs from Minerals: Several common drugs are produced from minerals. The mineral iodine is used in making tincture of iodine, a liquid that helps prevent infection when applied to cuts and bruises. The powder form of silver nitrate is applied on wounds to stop bleeding and prevent infection.

6. What are prescribed drugs?

(GUJ-I/II, MUL-I/II, SGD-I/II, DGK-II, SWL-II)

Ans: Prescribed: Prescription drugs are sold only on physician's prescription. These include barbiturates, tranquillizers, antibiotics etc.

7. What are analgesics? Give examples.

(GUJ-I, RWP-I, BWP-I/II)

Ans: Analgesics (Painkillers) reduce pain e.g aspirin, paracetamol etc.

8. Differentiate between analgesic and antibiotic.

(RWP-GI, LHR-GI, DGK-GII)

Ans: Analgesic: These medicines reduce pain and are known as pain killers. Asprine and paracetamol are the examples of analgesics.

Antibiotics: An antibiotic is a drug that kills or retards the growth of bacteria. They are the chemicals produced by or derived from microorganisms.

9. **What are vaccines? Give examples.**

(LHR-I/II, FSD-I, DGK-I, SWL-I, MUL-II)

Ans: A vaccine is a material containing weakened or killed pathogens and is used to produce immunity to a disease by stimulating the production of antibodies.

Examples: Small pox, whooping cough, Hepatitis B vaccines are available.

10. **What is difference between antiseptics and antibiotics.**

Ans: Antiseptics: Antiseptics reduce the possibility of infections on skin. (SGD-GII, DGK-GI-II, BWP-GI, MTN-GI)

Antibiotics: Antibiotics are medicines that kill the bacteria or stops their reproduction. These are the chemicals that make micro organisms. Antibiotics kill bacteria within or on the body of living things.

11. **What was discovered by Sir Alexander Flemming?**

(GUJ-I, FSD-I, DGK-I, SWL-I, MUL-II)

Ans: Sir Alexander Flemming (1881 - 1955) was a Scottish biologist. he discovered the antibiotic penicillin from the fungus penicillium notatum, for which he was awarded the Nobel Prize in 1945.

12. **Write a note on the work of Joseph Lister.**

(LHR-I/II, MUL-I, SGD-I, DGK-I/II, SWL-I/II)

Ans: Joseph Lister (1827 - 1912) was an English surgeon. He promoted the idea of sterile surgery for the first time. He introduced carbolic acid to sterilise surgical instruments and to clean wounds.

13. **What is terramycin?**

(LHR-I/II, FSD-I, DGK-I, SWL-I, MUL-II)

Ans: Researchers of a pharmaceutical company spent two years testing soil from all parts of the world to find new antibiotics. The project resulted in the development of one antibiotic, Terramycin, which is used to treat many infectious.

14. **What are the affects of sedative drugs?**

(FSD-I/II, MUL-I/II, SGD-I/II, DGK-II, SWL-II)

Ans: Sedatives: These drugs interact with central nervous system to depress its activities. Sedative drugs induce dizziness, lethargy, slow brain function and depression. Long-term use of sedatives induce suicidal thoughts.

15. **How terramycin work?**

(LHR-II, GUJ-I/II, FSD-I, MUL-I/II, SGD-I/II, DGK-II, SWL-II)

Ans: Terramycin is used to treat many infections.

16. **Define synthetic drug and give one example.**

(GUJ-I, FSD-I, DGK-I, SWL-I, MUL-II)

Ans: Synthetic Drug: The drugs which are synthesized in laboratory are called synthetic drugs. e.g aspirine.

17. **List four names of drugs obtained from animals.**

(LHR-I/II, MUL-I, SGD-I, DGK-I/II, SWL-I/II)

Ans: Drugs from Minerals: Drugs obtained from animals are usually their glandular products. Fish liver oils, musk, bees'wax, certain hormones and antitoxins are obtained from animal sources.

18. **Write down the role of "Joseph Lister".**

(LHR-I/II, MUL-I, SGD-I, DGK-I/II, SWL-I/II)

Ans: Joseph Lister promoted the idea of sterile surgery for the first time. He introduced carbolic acid to sterilise surgical instruments and to clean wounds.

19. Differentiate between antiseptics and disinfectants.

(FSD-I/II, MUL-I/II, SGD-I/II, DGK-II, SWL-II)

Ans: Difference between antiseptics and disinfectants:

| Antibiotics: | Disinfectants: |
|--|---|
| They inhibit or kill bacteria, with in or on the body. | These destroy the microorganisms found on non living objects. |

20. What is iodine tincture? Write its use.

(LHR-I/II, FSD-I, DGK-I, SWL-I, MUL-II)

Ans: Several common drugs are produced from minerals. The mineral iodine is used in making tincture of iodine, a liquid that helps prevent infection when applied to cuts and bruises. The powder form of silver nitrate is applied on wounds to stop bleeding and prevent infection.

21. Write name of any two narcotics.

(GUJ-I/II, MUL-I/II, SGD-I/II, DGK-II, SWL-II)

Ans: Morphine and codeine are the narcotics, derived from opium (poppy).

22. Write down the use of diamorphine.

(GUJ-I/II, MUL-I/II, SGD-I/II, DGK-II, SWL-II)

Ans: In many western countries, heroin is prescribed as a strong analgesic under the name diamorphine. Its use includes treatment for acute pain, such as in severe physical trauma, myocardial infarction, post-surgical pain etc.

23. What do you mean by hallucination?

(FSD-I/II, MUL-I/II, SGD-I/II, DGK-II, SWL-II)

Ans: Hallucinations are perceptions that have no basis in reality, but that appear entirely realistic.

24. Write a short note on Mari Juana.

(LHR-I/II, GUJ-I/II, FSD-I/II, MUL-I, SGD-II, DGK-I, SWL-I)

Ans: Mari juana is a hallucinogen, which is smoked. It is obtained from the flowers, stems and leaves of the marijuana plant (*Cannabis sativa* and *C. indica*). Small doses of marijuana result in a feeling of well being that lasts two to three hours. High doses increase heart rate. It also affects the production of sperms in men and also weakens the short term memory.

25. Write down the bad affects of marijuana.

(LHR-I/II, FSD-I, DGK-I, SWL-I, MUL-II)

Ans: High doses of marijuana increase heart rate. It also affects the production of sperms in men and also weakens the short-term memory.

26. What do you mean by social stigma?

[MUL-II < SWL-II, LHR-I, DGK-I, SWL-II]

Ans: Drug addicts may commit violent crimes since so many become psychic patients. The addicts are very weak in their social behaviour. They face social stigma i.e. the society dislikes them because of their unpredictable behaviour.

27. Differentiate between pharmaceutical and addictive drugs.

(GUJ-I, FSD-I, DGK-I, SWL-I, MUL-II)

Ans: Pharmaceutical (medicinal) drugs: These chemical substances are used in the diagnosis, cure, treatment or prevention of diseases. These drugs are classified into two major types.

Addictive drugs: These drugs make a person dependent on them. The person's body becomes familiar to it by using such drug. The user cannot function well without it.

28. Differentiate between sedatives and disinfectants. (GUJ-I, FSD-I, DGK-I, SWL-I, MUL-II)

Ans: Sedatives: These drugs interact with central nervous system to depress its activities. These induce dizziness, lethargy, slow brain function, long term use of sedatives induce suicidal thoughts.

Disinfectants: These destroy the microorganisms found on non living objects.

29. Differentiate between Halluci-nations and Hallucinogens. [BWP-I, FSD-II]

Ans: Hallucinations: Hallucinations are perceptions that have no basis in reality, but that appear entirely reaslistic.

Hallucinogens: Hallucinogens are drugs that cause changes in perception, thought, emotion and consciousness.

30. Write down two effects of Marijuana. (GUJ-I, FSD-I, DGK-I, SWL-I, MUL-II)

Ans: Marijuana is a hallucinogens which is smoked. It is obtained from the flowers, stems and leaves of the marijuana plants. Small dose is result in a feeling of well being and high dose increase heart rate.

31. From which plant morphine is obtained? (GUJ-I/II, MUL-I/II, SGD-I/II, DGK-II, SWL-II)

Ans: Morphine and codeine are the narcotics, derived from opium (poppy).

Lecture Number 27: (PTB Pg # 156 to 157)

18.3

Antibiotics and Vaccines

Antiblotics, Antibiotic Resistance, Vaccines, Mode of Action of Vaccines

All Punjab Past Board
Papers

MCQ's
(Multiple Choice Questions)

2014 - 2020

1. Edward Jenner introduce vaccine of which disease?

(FSD-I/II, MUL-I/II, SGD-I/II, DGK-II, SWL-II)

- (A) smallpox (B) AIDS (C) Hepatitis (D) Malaria

2. Antibiotics prohibit or kill the:

(LHR-II, GUJ-I/II, FSD-I, MUL-I/II, SGD-I/II, DGK-II, SWL-II)

- (A) Worms (B) Virus (C) Bacteria (D) Yeast

3. Which one of the following disease is cured by vaccines?

(GUJ-I, FSD-I, DGK-I, SWL-I, MUL-II)

- (A) Aids (B) Cancer (C) Small pox (D) Malaria

4. Which inhibits or kills bacteria within or on the body? (GUJ-I, FSD-I, DGK-I, SWL-I, MUL-II)

- (A) Disinfectants (B) Antibodies (C) Antiseptics (D) Antibiotics

5. Sir Alexander Fleming discovered the:

(LHR-I/II, FSD-I, DGK-I, SWL-I, MUL-II)

- (A) Tetracycline (B) Aspirine (C) Cephalopirin (D) Penicillin

6. Antibiotics inhibit or kill:

(FSD-I/II, MUL-I/II, SGD-I/II, DGK-II, SWL-II)

- (A) worms (B) viruses (C) bacteria (D) yeast

Answers

| | | | |
|-------------------|-----------------|------------------|--------------------|
| 1. (A) smallpox | 2. (C) Bacteria | 3. (C) Small pox | 4. (D) Antibiotics |
| 5. (D) Penicillin | 6. (C) bacteria | | |

All Punjab Past Board
Papers**Short Questions**
(Subjective Type)

2014 - 2020

1. What is antibiotics? Give example.

(FSD-I/II, MUL-I/II, SGD-I/II, DGK-II, SWL-II)

Ans: An antibiotic is a drug that kills or retards the growth (reproduction) of bacteria. They are the chemicals produced by or derived from micro-organisms (bacteria and fungi).

Example: Cephalosporins, Tetracyclines

2. Write down the name of two types of antibiotics.

(GUJ-I, FSD-I, DGK-I, SWL-I, MUL-II)

Ans: The name of two types of antibiotics are as follow:

- (i) Bactericidal antibiotics
- (ii) bacteriostatic antibiotics

3. What is meant by Broad Spectrum and Narrow Spectrum Antibiotics.

(FSD-I/II, MUL-I/II, SGD-I/II, DGK-II, SWL-II)

Ans: "Some antibiotics can be used to treat a wide range of infections and are known as broad spectrum antibiotics. Other antibiotics are only effective against a few types of bacteria and are called narrow spectrum antibiotics.

4. What are the difference between bactericidal and bacteriostatic antibiotics?

(LHR-I/II, MUL-I, SGD-I, DGK-I/II, SWL-I/II)

Ans: Some antibiotics are 'bactericidal', meaning that they kill bacteria. Others are 'bacteriostatic', meaning that they work by stopping bacterial growth.

5. What are cephalosporines and tetracyclines?

(FSD-GI, SWL-GII, BWP-GII)

Ans: Cephalosporines: Cephalosporins interfere with synthesis of bacterial cell wall and so are bactericidal. Cephalosporins are used to treat pneumonia, sore throat, tonsillitis, bronchitis etc.

Tetracyclines: These are broad spectrum bacteriostatic antibiotics and inhibit bacterial protein synthesis. Tetracyclines are used in the treatment of infections of respiratory tract, urinary tract, intestine etc. Tetracyclines are not used in children under the age of 8, and specifically during periods of tooth development.

6. What do you know about Sulpha Drugs?

(FSD-I/II, MUL-I/II, SGD-I/II, DGK-II, SWL-II)

Ans: Sulpha drugs are synthetic antibiotics that contain sulfonamide group. Sulfonamides are broad spectrum bacteriostatic antibiotics. They inhibit the folic acid synthesis in bacteria. They are used to treat pneumonia and urinary tract infections.

7. Define vaccine. Who introduced it?

(LHR-I/II, FSD-I, DGK-I, SWL-I, MUL-II)

Ans: A vaccine is a material containing weakened or killed pathogens and is used to produce immunity to a disease by stimulating the production of antibodies. In 1796, a British Edward Jenner introduced it.

8. Define antigens.

[SWL-I, FSD-I/II, MUL-II, SGD-II, DGK-II, SWL-II]

Ans: Pathogens contain special proteins called "antigens". When pathogens enter the body (blood) of host, these proteins stimulate the immune response in host i.e. synthesis of "antibodies".

9. Define antibodies.

(GUJ-I/II, MUL-I/II, SGD-I/II, DGK-II, SWL-II)

Ans: Antibodies: Pathogens contain special proteins called "antigens". When pathogens enter the body (blood) of host, these proteins stimulate the immune response in host.
Example: synthesis of "antibodies".

10. What are the function of antibodies in blood?

(GUJ-I, FSD-I, DGK-I, SWL-I, MUL-II)

Ans: Function of Antibodies: Antibodies bind to pathogens and destroy them. In addition, "memory cells" are produced, which remain in blood and provide protection against future infections with in the same pathogen.

11. Write the names of two major groups of antibiotics.

(GUJ-I, FSD-I, DGK-I, SWL-I, MUL-II)

Ans: Types of Antibiotics: There are two types of antibiotics with reference to their use in the treatment of bacterial infections.

(1) **Bactericidal:** These antibiotics kill bacteria.

(2) **Bacteriostatic:** These antibiotics inhibit bacterial growth. Antibiotic are also classified into two types with respect to their range of action.

12. How Edward Jenner use the vaccine?

(LHR-I/II, FSD-I, DGK-I, SWL-I, MUL-II)

Ans: In 1796, a British physician, Edward Jenner, infected a young boy with cowpox, by injecting pus cells. After the boy had recovered from cowpox, Jenner injected the pus cells from a smallpox patient into him. The boy did not get smallpox.

13. What are the uses of carbolic acid in surgery?

(LHR-I/II, MUL-I, SGD-I, DGK-I/II, SWL-I/II)

Ans: Joseph Lister promoted the idea of sterile surgery for the first time. He introduced carbolic acid to sterilise surgical instruments and to clean wounds.

14. Differentiate between antigens and antibodies.

[SGD-II, LHR-II, DGK-II]

Ans: Antigens: Antigens is a molecule that can stimulate an immune response (antibody). It is a special protein.

Antibodies: Antibodies are protein which kill the pathogens.

15. What is the usage of antibiotic drugs?

(GUJ-I, FSD-I, DGK-I, SWL-I, MUL-II)

Ans: Antibiotics: "An antibiotic is a drug that kills or retards the growth of bacteria". Antibiotics are the chemicals produced by or derived from microorganisms (bacteria & fungi). These are the most frequently prescribed medicines.

Types of Antibiotics: There are two types of antibiotics with reference to their use in the treatment of bacterial infections.

(1) **Bactericidal:** These antibiotics kill bacteria.

(2) **Bacteriostatic:** These antibiotics inhibit bacterial growth.

16. What problem is faced by development of antibiotics resistant bacteria?

(GUJ-I/II, MUL-I/II, SGD-I/II, DGK-II, SWL-II)

Ans: When bacteria are exposed to the same antibiotics over and over, they can change and are no longer affected by the drug. Antibiotic resistance is a very serious problem. The treatment of some infectious diseases is becoming more difficult. More powerful antibiotics are used for the treatment of some resistant bacteria, but some infections cannot be eliminated by using new powerful antibiotics.

17. Write down the function of antibodies.

(FSD-I/II, MUL-I/II, SGD-I/II, DGK-II, SWL-II)

Ans: Function of Antibodies: Antibodies bind to pathogens and destroy them. In addition, "memory cells" are produced, which remain in blood and provide protection against future infections with the same pathogen.

18. Differentiate between vaccine and vaccination.

(GUJ-I, FSD-I, DGK-I, SWL-I, MUL-II)

Ans: Vaccine: A vaccine is a material containing weakened or killed pathogens and is used to produce immunity to a disease by stimulating the production of antibodies. This method was named "vaccination" and the substance used to vaccinate was called vaccine.

19. Give the difference between broad spectrum and narrow spectrum antibiotics. (LHR-II, GUJ-I/II, FSD-I, MUL-I/II, SGD-I/II, DGK-II, SWL-II)

Ans: Difference between broad spectrum and narrow spectrum:

| Broad Spectrum | Narrow spectrum |
|---|---|
| Some antibiotics can be used to treat a wide range of infections and are known as broad spectrum antibiotics. | Some antibiotics are only effective against a few types of bacteria and are called narrow spectrum antibiotics. |

◆◆◆

Home Work: Syllabus

Exercise

Class Work:

Questions: Multiple Choice Questions (1- 8) (PTB: Pg # 157)

Home Work:

Short Questions (1,2,4,5) Understanding the Concepts (1-5) (PTB: Pg # 157-158)

Multiple Choice Questions (MCQ's)

- Antibiotics are used for the:**
 - Treatment of viral infections
 - Treatment of bacterial infections
 - Immunization against infections
 - Both "a" and "b"
- The substances used of the treatment, cure prevention or diagnosis of disease are called:**
 - Medicinal drugs
 - Narcotics
 - Hallucinogens
 - Sedatives
- Aspirin is categorized as;**
 - A drug from animals
 - A synthetic drug
 - A drug from plants
 - A drug from minerals
- The drug used to reduce pain are known as;**
 - Analgesics
 - Antiseptics
 - Antibiotics
 - Sedatives
- Which of the following drugs is obtained from plants?**
 - Aspirin
 - Opium
 - Cephalosporin
 - Insulin
- Which of these addictive drugs are also used as painkillers?**
 - Narcotics
 - Sedatives
 - Hallucinogens
 - All can be used
- Sulfonamides affect bacteria in the following way:**
 - Break the cell wall
 - Inhibit protein synthesis
 - Stop the synthesis of new cell wall
 - Stop the synthesis of folic acid
- What is true about vaccines?**
 - Protect against the future viral and bacterial infection
 - Treat the existing bacterial infections only
 - Treat existing infections and also protect against future infections
 - Protect against viral infections only

Answers

| | | | |
|--|------------------------|---|---|
| 1. (b) Treatment of bacterial infections | 2. (a) Medicinal drugs | 3. (b) A synthetic drug | 4. (a) Analgesics |
| 5. (b) Opium | 6. (a) Narcotics | 7. (d) Stop the synthesis of folic acid | 8. (a) Protect against the future viral and bacterial infection |

Short Questions

1. **Define pharmacology and distinguish it from pharmacy.**

Ans: Pharmacology is not synonymous with pharmacy, which is the name used for a profession, though in common usage the two terms are confused. Pharmacology is the study of drugs composition properties and medical applications, while pharmacy is a profession.

2. **Differentiate between medicinal drug and addictive drug.**

Ans: The drugs which are obtained from different plant sources, bacterial sources and fungi used for the treatment of the humans called medicinal drugs, while some drugs often make person dependent on them these are called addictive drugs.

4. **What is marijuana? To which category of addictive drugs, it belongs?**

Ans: Marijuana is a hallucinogen, which is smoked. It is obtained from the flowers, stems, and leaves of the marijuana plant (*Cannabis sativa* and *C. indica*).

5. **Differentiate between narcotics and hallucinogens.**

Ans: Hallucinations are perceptions that have no basis in reality, but that appear entirely realistic, while Narcotics are strong painkillers. These drugs are often prescribed in conjunction with other less potent painkillers (paracetamol or aspirin). These are used to relieve pain for patients with chronic diseases such as cancer.

Understanding The Concept

1. **What are the sources of drugs? Give examples.**

Ans: For answer see Page # 222 in Al-Ghazali Rehnuma Notes.

2. **Write a note on sedatives, narcotics and hallucinogens.**

Ans: For answer see Page # 226 to 227 in Al-Ghazali Rehnuma Notes.

3. **Describe the main groups of antibiotics.**

Ans: For answer see Page # 229 in Al-Ghazali Rehnuma Notes.

4. **Write a note on resistance against antibiotics.**

Ans: For answer see Page # 229 in Al-Ghazali Rehnuma Notes.

5. **Describe the mode of action of vaccines.**

Ans: For answer see Page # 230 in Al-Ghazali Rehnuma Notes.

Note: These are long Questions. For answer consult P.T.B/Al-Ghazali Rahnuma Notes.

AL-GHAZALI SELF TEST SYSTEM

Smart Syllabus

Test Session

| Sr.No. | Chapter Wise Self Test System | Page No. |
|--------|---|----------|
| 1. | Chapter Wise Self Test 1 | 101 |
| 2. | Chapter Wise Self Test 2 | 103 |
| 3. | Chapter Wise Self Test 3 | 105 |
| 4. | Chapter Wise Self Test 4 | 107 |
| 5. | Chapter Wise Self Test 5 | 109 |
| 6. | Chapter Wise Self Test 6 | 111 |
| 7. | Chapter Wise Self Test 7 | 113 |
| 8. | Chapter Wise Self Test 8 | 115 |
| 9. | Chapter Wise Self Test 9 | 117 |
| ◆ | Super Guess Self Test System | |
| 10. | 1st Half Book | 119 |
| 11. | 2nd Half Book | 121 |
| ◆ | Full Selective Syllabus Self Test System | |
| 12. | Full Selective Syllabus Self Test 1 | 123 |
| 13. | Full Selective Syllabus Self Test 2 | 125 |

Chapter Wise Self Test

1

Chapter 10:

Gaseous Exchange

Total Marks: 12

(Objectives)

Time: 15 mint

| |
|---|
| 1 |
| 2 |
| 3 |
| 4 |
| 5 |
| 6 |

| | | | |
|-----|-----|-----|-----|
| (A) | (B) | (C) | (D) |
| (A) | (B) | (C) | (D) |
| (A) | (B) | (C) | (D) |
| (A) | (B) | (C) | (D) |
| (A) | (B) | (C) | (D) |
| (A) | (B) | (C) | (D) |

| |
|----|
| 7 |
| 8 |
| 9 |
| 10 |
| 11 |
| 12 |

| | | | |
|-----|-----|-----|-----|
| (A) | (B) | (C) | (D) |
| (A) | (B) | (C) | (D) |
| (A) | (B) | (C) | (D) |
| (A) | (B) | (C) | (D) |
| (A) | (B) | (C) | (D) |
| (A) | (B) | (C) | (D) |

Note: Four possible answers A, B, C and D to each question are given. The choice which you think is correct, fill that circle in front of that question with Marker or Pen ink. Cutting or filling two or more circles will result in zero mark in that question.

- Intake of oxygen from environment and removal of carbon dioxide is called:
 - Cellular respiration
 - Excretion
 - Gaseous exchange
 - Secretion
- The percentage of oxygen from air which we inspired is:
 - 15%
 - 21%
 - 25%
 - 28%
- Stomata are present in:
 - Xylem
 - Phloem
 - Epidermis
 - Endodermis
- Stoma are abundantly present:
 - on upper epidermis of leaf
 - on stem
 - in xylem cells
 - in phloem cells
- A thick muscular structure is present below the lungs:
 - kidney
 - liver
 - diaphragm
 - ureter
- During exercise or other hard physical works the breathing rate may increase up to _____ per minute.
 - 30-40 times
 - 10-20 times
 - 20-30 times
 - 40-50 times
- A narrow opening present at the floor of pharynx is called:
 - Trachea
 - nostril
 - larynx
 - glottis
- Many chemicals in smoke increase the production of _____ blood cells.
 - White
 - Red
 - Platelets
 - Osteocytes
- Number of carcinogens present in tobacco smoke is:
 - 4,000
 - 55
 - 50
 - 40
- If both lungs are infected the disease is called:
 - Typhoid
 - Double Pneumonia
 - Gout
 - Arthrites
- Which disease is not related to lungs:
 - Asthma
 - Emphysema
 - Myopia
 - Pneumonia
- In non-smokers who are exposed to second hand smoke increase their heart disease risk by:
 - 15-20%
 - 20-30%
 - 25-30%
 - 30-45%

Marks: 48

(Subjective)

Time: 1:45 minutes

Part - I

2. Write short answers to any Five (5) questions: [5x2=10]
- What is meant by cellular respiration?
 - What is the difference between breathing and cellular respiration?
 - How does the gaseous exchange occur in leaves and young stems?
 - What is meant by gaseous exchange?
 - Differentiate between stomata and air spaces.
 - How will you differentiate between a stoma and a lenticel?
 - Describe aerobic respiration.
 - What is meant by gaseous Exchange? Also define breathing.
3. Write short answers to any Five (5) questions: [5x2=10]
- Differentiate between Nasal Cavity and Nostril.
 - What is the function of hairs and mucous in the nose?
 - Differentiate between glottis and epiglottis.
 - What is larynx? Why Larynx are called voice box?
 - What are alveoli? What is their function?
 - What is meant by diaphragm?
 - What are intercostal muscles?
 - Define Bronchioles.
4. Write short answers to any Five (5) questions: [5x2=10]
- Define bronchitis. How is it caused?
 - Write down the causes and symptoms of pneumonia.
 - Define asthma. Write down its causes.
 - Write down the treatment of Asthama.
 - Why passive smoking is dangerous for health?
 - Write the use of nicotine in the past.
 - Write down the bad effects of smoking.
 - Which bacterium is responsible for infection of Pneumonia.

Part - II

NOTE:- Attempt any two questions. [9x2=18]

5. (a) Explain Stomata.
(b) How will you differentiate between a stomata and a lenticels?
6. (a) How do the different parts of the plant body exchange gases with the environment?
(b) Trace the path of air from the nasal cavity to the alveoli.
7. (a) Write down the steps of inhalation and exhalation.
(b) How does the tobacco smoke damage the respiratory system?

Chapter Wise Self Test

2

Chapter 11:

Homeostasis

Total Marks: 12

(Objectives)

Time: 15 mint

| |
|---|
| 1 |
| 2 |
| 3 |
| 4 |
| 5 |
| 6 |

| | | | |
|-----|-----|-----|-----|
| (A) | (B) | (C) | (D) |
| (A) | (B) | (C) | (D) |
| (A) | (B) | (C) | (D) |
| (A) | (B) | (C) | (D) |
| (A) | (B) | (C) | (D) |
| (A) | (B) | (C) | (D) |

| |
|----|
| 7 |
| 8 |
| 9 |
| 10 |
| 11 |
| 12 |

| | | | |
|-----|-----|-----|-----|
| (A) | (B) | (C) | (D) |
| (A) | (B) | (C) | (D) |
| (A) | (B) | (C) | (D) |
| (A) | (B) | (C) | (D) |
| (A) | (B) | (C) | (D) |
| (A) | (B) | (C) | (D) |

Note: Four possible answers A, B, C and D to each question are given. The choice which you think is correct, fill that circle in front of that question with Marker or Pen ink. Cutting or filling two or more circles will result in zero mark in that question.

1. Example of Hydrophyte plants is:

- (A) Water lily (B) Cactus (C) Sea grass (D) Grass

2. Such plants have deep roots to absorb maximum water from soil.

- (A) Hydrophytes (B) Xerophytes (C) Halophytes (D) Mesophytes

3. The process in which metabolic wastes are eliminated from body is called:

- (A) Osmoregulation (B) Thermoregulation
(C) Homeostasis (D) Excretion

4. The plants which live completely or partially submerged in fresh water are called:

- (A) hydrophytes (B) halophytes (C) xerophytes (D) bryophytes

5. It is formed due to condensation of water vapours on the plant surface:

- (A) Guttation (B) Transpiration (C) Dew (D) Sebum

6. _____ is the name of outer region of longitudinal.

- (A) renal cortex (B) renal medulla (C) renal pyramids (D) renal pelvis

7. Urine is temporarily stored in which of these until it is released from body.

- (A) Kidney (B) Ureter (C) Urinary bladder (D) Urethra

8. As per normal chemical composition the amount of water in the urine is:

- (A) 60% (B) 70% (C) 80% (D) 95%

9. The concave part of the kidney:

- (A) Upper (B) Lower
(C) Faces vertebral column (D) Away from vertebral column

10. _____ performs role in the maintenance of body temperature

- (A) Lung (B) Skin (C) Kidney (D) Ears

11. The average lifetime for a donated kidney is:

- (A) ten to eleven years (B) ten to fifteen years
(C) five to ten years (D) fifteen to twenty years

12. The functional unit of kidney is:

- (A) Glomerulus (B) Bowman's capsule (C) Loop of Henle (D) Nephron

Marks: 48

(Subjective)

Time: 1:45 minute

Part - I**2. Write short answers to any Five (5) questions: [5x2=10]**

- (i) How plants remove extra water from their body?
- (ii) Differentiate between guttation and transpiration
- (iii) Why transpiration does not occur at night?
- (iv) Differentiate between guttation and Dew.
- (v) From which plants resins, gums, latex, mucilage are obtained?
- (vi) What is xerophyte?
- (vii) What is meant by osmosis?
- (viii) What is succulent organs?

3. Write short answers to any Five (5) questions: [5x2=10]

- (i) What is called guttation?
- (ii) How does the gaseous exchange occur in aquatic plants?
- (iii) What is meant by metabolic waste?
- (iv) Write down two adaptations in xerophytes to prevent loss of water.
- (v) Write four names of parts of urinary system.
- (vi) Differentiate between hilus and renal pelvis.
- (vii) Differentiate between renal cortex and renal medulla.
- (viii) What is functional unit of Kidney?

4. Write short answers to any Five (5) questions: [5x2=10]

- (i) Write down the name of two main parts of nephron.
- (ii) Write down the function of Bowman's capsule in nephron.
- (iii) Write the name of two parts of Renal Corpuscle.
- (iv) Describe renal tubule.
- (v) What is meant by pressure filtration?
- (vi) What is glomerulus filtrate?
- (vii) What is tubular secretion in the function of kidney?
- (viii) How does the papillary ducts form and where does it drain?

Part - II**NOTE:- Attempt any two questions. [9x2=18]**

- 5. (a) Describe the process of selective re-absorption in the kidneys.
(b) What steps are involved in the formation of urine in the kidneys?
- 6. (a) How do the plants excrete extra water and salts from their bodies?
(b) "Along with excretion, kidneys also play role in Osmoregulation." Comment on this statement.
- 7. (a) What is the functional unit of the kidney? Describe its structure and draw a labeled diagram.
(b) What is hypertonic urine? Write it with reason.

Chapter Wise Self Test

3

Chapter 12: Coordination and Control

Total Marks: 12

(Objectives)

Time: 15 mint

- 1
- 2
- 3
- 4
- 5
- 6

| | | | |
|-----|-----|-----|-----|
| (A) | (B) | (C) | (D) |
| (A) | (B) | (C) | (D) |
| (A) | (B) | (C) | (D) |
| (A) | (B) | (C) | (D) |
| (A) | (B) | (C) | (D) |
| (A) | (B) | (C) | (D) |

- 7
- 8
- 9
- 10
- 11
- 12

| | | | |
|-----|-----|-----|-----|
| (A) | (B) | (C) | (D) |
| (A) | (B) | (C) | (D) |
| (A) | (B) | (C) | (D) |
| (A) | (B) | (C) | (D) |
| (A) | (B) | (C) | (D) |
| (A) | (B) | (C) | (D) |

Note: Four possible answers A, B, C and D to each question are given. The choice which you think is correct, fill that circle in front of that question with Marker or Pen ink. Cutting or filling two or more circles will result in zero mark in that question.

1. Which one is coordinator in nervous coordination?
(A) Glands (B) Brain and spinal cord
(C) Brain (D) Spinal cord
2. A coordinated action has _____ components.
(A) 2 (B) 3 (C) 4 (D) 5
3. Action performed by effectors is.
(A) Stimulus (B) Impuls (C) Response (D) Axon
4. Effectors include.
(A) Only muscles (B) Only glands (C) Muscles and glands (D) Brain
5. Which one controls feelings such as rage, pain, pleasure and sorrow?
(A) Cerebellum (B) Medulla (C) Hypothalamus (D) Midbrain
6. The unit of the nervous system is:
(A) cell body (B) neuron (C) axon (D) nephron
7. The part of brain responsible for muscle movements:
(A) Cerebrum (B) Midbrain
(C) Medulla oblongata (D) Cerebellum
8. Number of pairs of spinal nerves arising along apinal cord of human is:
(A) 27 (B) 29 (C) 31 (D) 33
9. Where are Insulin and glucagon produced?
(A) Hypothalemus (B) Anterior pituitary
(C) Liver (D) Pancreas
10. Two Glands are situated above kidneys:
(A) Adrenal (B) Parathyroid (C) Thyroid (D) Pancreas
11. Which hormone develops the male secondary sex characters?
(A) Insulin (B) testosterone (C) progestrone (D) estrogen
12. Which hormone falls the blood glucose concentrati n?
(A) Glucagon (B) Isnulin (C) Thyroxin (D) Oxytocin

Marks: 48

(Subjective)

Time: 1:45 minute

Part - I

2. Write short answers to any Five (5) questions:

[5x2=10]

- (i) What is coordination? Write its types.
- (ii) Write down the name of types of coordination in organisms.
- (iii) What are the main components of coordination?
- (iv) How unicellular organisms co-ordinate their functions?
- (v) Define stimuli. Also give example.
- (vi) Define receptors and give examples.
- (vii) What are effectors? Give its two examples.
- (viii) Differentiate between stimuli and response.

3. Write short answers to any Five (5) questions:

[5x2=10]

- (i) What is meant by myelin sheath?
- (ii) What is the difference between sensory and motor neurons?
- (iii) Write down the function of Thalamus.
- (iv) Describe the functions of frontal and temporal lobe.
- (v) What do you know about spinal cord? Write down its length.
- (vi) Define reflex action and reflex arc.
- (vii) Write the two functions of Midbrain.
- (viii) Differentiate nerve and ganglion.

4. Write short answers to any Five (5) questions:

[5x2=10]

- (i) Define Endocrine System.
- (ii) Why iodine is necessary for us?
- (iii) Write down the function of parathyroid glands.
- (iv) Write down the symptoms and causes of tetany.
- (v) Write two functions of oxytocin?
- (vi) What is meant by positive feedback mechanism?
- (vii) Differentiate between Exocrine Glands and Endocrine.
- (viii) Define Exocrine Glands?

Part - II

NOTE:- Attempt any two questions.

[9x2=18]

5. (a) Explain what can happen if there is no coordination in the activities of organisms?
(b) Explain the location and function of these parts of brain, cerebrum, cerebellum, pituitary glands, thalamus, hypothalamus, medulla oblongata.
6. (a) Define neuron and describe the structure of a general neuron.
(b) Outline the major glands of the endocrine system (pituitary, thyroid, pancreas, adrenal, gonads), with name of their hormones and their functions.
7. (a) Describe negative feedback with reference to insulin and glucagon.
(b) Explain how adrenaline may be involved in exercise and emergency.

Chapter Wise Self Test

4

Chapter 13: Support and Movement

Total Marks: 12

(Objectives)

Time: 15 mint

| | | | | | | | | | |
|---|-----|-----|-----|-----|----|-----|-----|-----|-----|
| 1 | (A) | (B) | (C) | (D) | 7 | (A) | (B) | (C) | (D) |
| 2 | (A) | (B) | (C) | (D) | 8 | (A) | (B) | (C) | (D) |
| 3 | (A) | (B) | (C) | (D) | 9 | (A) | (B) | (C) | (D) |
| 4 | (A) | (B) | (C) | (D) | 10 | (A) | (B) | (C) | (D) |
| 5 | (A) | (B) | (C) | (D) | 11 | (A) | (B) | (C) | (D) |
| 6 | (A) | (B) | (C) | (D) | 12 | (A) | (B) | (C) | (D) |

Note: Four possible answers A, B, C and D to each question are given. The choice which you think is correct, fill that circle in front of that question with Marker or Pen ink. Cutting or filling two or more circles will result in zero mark in that question.

- An adult person skeleton has hard bones:
(A) 406 (B) 306 (C) 206 (D) 106
- Some bones prepare:
(A) Mucous (B) Blood cells (C) Oxygen (D) Hormones
- Number of bones in skull is:
(A) 22 (B) 08 (C) 14 (D) 80
- Number of cranial bones in human skeleton is:
(A) 22 (B) 14 (C) 8 (D) 33
- Tendons and ligaments are bands of:
(A) Connective tissues (B) Muscular tissues
(C) Nerve tissues (D) Epidermal tissues
- _____ prevent dislocation of bones at joints:
(A) Collagen (B) Tendons (C) Ligaments (D) Cartilage
- An example of Immoveable joints is:
(A) Joint of skull (B) Hip joint (C) Shoulder joint (D) Elbow joint
- Ball and Socket joints allow movement in:
(A) One direction (B) Two direction (C) All directions (D) No direction
- Which point of attachment on bone is pulled when a muscle contracts?
(A) origin (B) flexion (C) extension (D) Insertion
- The movement of an animal as a whole from one place to another is called:
(A) Support (B) Movement (C) Locomotion (D) Growth
- The end of a skeletal muscle which is always attached with some Immoveable bone is called:
(A) origin (B) Insertion (C) belly (D) static end
- The number of bones in Appendicular Skeleton is:
(A) 120 (B) 124 (C) 126 (D) 125

Marks: 48

(Subjective)

Time: 1:45 minute

Part - I

2. Write short answers to any Five (5) questions: [5x2=10]

- (i) What do you know about locomotion?
- (ii) What is meant by movement? Describe its types.
- (iii) What is elastic cartilage?
- (iv) Write down the number of bones in human skeleton system.
- (v) What is the difference between compact bone and spongy bone?
- (vi) State appendicular skeleton.
- (vii) Differentiate between bone and cartilage.
- (viii) What do you know about Andreas vesalius?

3. Write short answers to any Five (5) questions: [5x2=10]

- (i) What is meant by joint? Write the names of its two types.
- (ii) Write the names of types of joints.
- (iii) What do you mean by moveable joints? Give example.
- (iv) What are the hinge joints? Write two examples.
- (v) Differentiate between hinge joints and ball-and-socket joints.
- (vi) What do you mean by Ligaments?
- (vii) What are tendons? Write down its function.
- (viii) What are tendons and ligaments? Write two differences.

4. Write short answers to any Five (5) questions: [5x2=10]

- (i) Define origin of muscle.
- (ii) What do you mean by muscle insertion?
- (iii) What is antagonism?
- (iv) What is difference b/w origin and insertion?
- (v) Differentiate between flexor and extensor muscle.
- (vi) Differentiate between flexion and extension.
- (vii) What are biceps and triceps?
- (viii) Write two functions of human bone joints.

Part - II

NOTE:- Attempt any two questions. [9x2=18]

- 5. (a)** What are the main components of the axial skeleton and the appendicular skeleton of human.
- (b)** Explain antagonism in muscle action selecting biceps and triceps as example.
- 6. (a)** Describe the types of joints and give examples.
- (b)** Differentiate b/w cartilage & bone.
- 7. (a)** What are ligaments and tendons? What function do they perform?
- (b)** What is the role of skeleton in support and movement?

Chapter Wise Self Test

5

Chapter 14: Reproduction

Total Marks: 12

(Objectives)

Time: 15 mint

| | | | | | | | | | |
|---|-----|-----|-----|-----|----|-----|-----|-----|-----|
| 1 | (A) | (B) | (C) | (D) | 7 | (A) | (B) | (C) | (D) |
| 2 | (A) | (B) | (C) | (D) | 8 | (A) | (B) | (C) | (D) |
| 3 | (A) | (B) | (C) | (D) | 9 | (A) | (B) | (C) | (D) |
| 4 | (A) | (B) | (C) | (D) | 10 | (A) | (B) | (C) | (D) |
| 5 | (A) | (B) | (C) | (D) | 11 | (A) | (B) | (C) | (D) |
| 6 | (A) | (B) | (C) | (D) | 12 | (A) | (B) | (C) | (D) |

Note: Four possible answers A, B, C and D to each question are given. The choice which you think is correct, fill that circle in front of that question with Marker or Pen ink. Cutting or filling two or more circles will result in zero mark in that question.

- _____ is essential for the continuation of species.
(A) reproduction (B) locomotion (C) respiration (D) cloning
- Some invertebrates also reproduce through binary fission.
(A) Sexual Reproduction (B) Asexual Reproduction
(C) Pollination (D) Cloning
- Microspores are produced by:
(A) Mitosis (B) Meiosis (C) Fission (D) Budding
- These are horizontal underground stems with scale leaves:
(A) tubers (B) rhizomes (C) suckers (D) none of these
- The latest method of vegetative propagation is:
(A) cutting (B) grafting (C) layering (D) cloning
- Rhizopus reproduce asexually by:
(A) Binary fission (B) Budding (C) Spore (D) Endospore
- Optimum temperature for seed germination is:
(A) 25–30°C (B) 30–35°C (C) 15–25°C (D) 35–38°C
- In flower stigma, style and ovary is collectively called:
(A) sepal (B) petal (C) stamen (D) carpel
- The example of insect pollinated flower is:
(A) corn (B) rose (C) willow (D) hazel
- Diploid (2N) is:
(A) Egg cell (B) Sperm cell (C) Zygote (D) Endosperm
- The male and female gametes are produced in specialized organs are called:
(A) Gametogenesis (B) Zygote (C) Placenta (D) Gonads
- A cluster of specialized cells which surrounds and nourishes, each egg cell is called:
(A) Fallopian tubes (B) Follicle (C) Uterus (D) Cervix

Marks: 48

(Subjective)

Time: 1:45 minute

Part - I**2. Write short answers to any Five (5) questions: [5x2=10]**

- (i) Define reproduction.
- (ii) Describe importance of reproduction.
- (iii) Differentiate between sexual and asexual reproduction.
- (iv) Define Reproduction and give names of two types.
- (v) What are endospores?
- (vi) Define parthenogenesis.
- (vii) What do you mean by vegetative propagation in plants?
- (viii) Describe the method of reproduction in Corals and Hydra.

3. Write short answers to any Five (5) questions: [5x2=10]

- (i) Define stem tuber with example.
- (ii) How plants reproduce through suckers? Give Example.
- (iii) What is meant by cutting? Give one example also.
- (iv) Write the disadvantages of artificial vegetative propagation of plants.
- (v) Define alternation of generation in plants.
- (vi) Differentiate between zygote and endosperm.
- (vii) What is meant by dormancy?
- (viii) Differentiate between epicotyl and hypocotyl.

4. Write short answers to any Five (5) questions: [5x2=10]

- (i) Write the process of spore formation in sporangium.
- (ii) What is Calyx?
- (iii) What is meant by Gametogenesis?
- (iv) State fertilization.
- (v) Differentiate between Internal and External Fertilization.
- (vi) STD stands for? Write down the name of one STD
- (vii) Define internal fertilization with example.
- (viii) What are gonads? Write down the names of male and female gonads.

Part - II**NOTE:- Attempt any two questions.****[9x2=18]**

5. (a) What are the different ways by which prokaryotes, protozoans and fungi reproduce asexually?
(b) Why do gardeners use the methods of cutting and grafting?
6. (a) Explain, how the epigeal and hypogeal germinations are different?
(b) Outline the life cycle of a flowering plant.
7. (a) Outline the methods of asexual reproduction in animals.
(b) What structural adaptations will you find in a wind-pollinated flower?

Chapter Wise Self Test

6

Chapter 15: Inheritance

Total Marks: 12

(Objectives)

Time: 15 mint

| | | | | | | | | | |
|---|-----|-----|-----|-----|----|-----|-----|-----|-----|
| 1 | (A) | (B) | (C) | (D) | 7 | (A) | (B) | (C) | (D) |
| 2 | (A) | (B) | (C) | (D) | 8 | (A) | (B) | (C) | (D) |
| 3 | (A) | (B) | (C) | (D) | 9 | (A) | (B) | (C) | (D) |
| 4 | (A) | (B) | (C) | (D) | 10 | (A) | (B) | (C) | (D) |
| 5 | (A) | (B) | (C) | (D) | 11 | (A) | (B) | (C) | (D) |
| 6 | (A) | (B) | (C) | (D) | 12 | (A) | (B) | (C) | (D) |

Note: Four possible answers A, B, C and D to each question are given. The choice which you think is correct, fill that circle in front of that question with Marker or Pen ink. Cutting or filling two or more circles will result in zero mark in that question.

- Transmission of characteristics from parents to offspring is called:
 - Inheritance
 - Mutation
 - Regeneration
 - Reproduction
- The branch of Biology in which we study about inheritance is called:
 - Microbiology
 - Physiology
 - Genetics
 - Ecology
- Inherited characters are called.
 - Fertilization
 - Genetics
 - Traits
 - Genes
- The term "True Breeding" means:
 - Heterozygous
 - Homologous
 - Heterologous
 - Homozygous
- Dominant alleles are represented by:
 - Roman numbers
 - Capital letters
 - Small letters
 - numerical numbers
- Model of DNA structure was presented by:
 - Mendel
 - Buffon
 - Lamarck
 - Watson and Crick
- Albinism is a trait:
 - co-dominant
 - dominant
 - heterozygous
 - recessive
- Place of existence of a gene on the chromosome is:
 - Locus
 - Karyotype
 - Chromatid
 - Centromere
- How many genetically different kinds of gametes an individual with genotype AAbb can produce?
 - 1
 - 2
 - 4
 - 8
- In Four O Clock plants, this flower colour is not present:
 - red
 - pink
 - white
 - black
- Mendel selected a plant:
 - Pea
 - Rose
 - Cabbage
 - Mustard
- Mendel got the ratio of tall to short plants in F₂ as:
 - 3 : 1
 - 2 : 3
 - 9 : 3 : 3 : 1
 - 1 : 3 : 9 : 3

Marks: 48

(Subjective)

Time: 1:45 minute

Part - I

2. Write short answers to any Five (5) questions: [5x2=10]

- (i) Define Genetics.
- (ii) What do you mean inheritance?
- (iii) What are traits? Give an example.
- (iv) Define Gene.
- (v) Describe the structure of chromosome.
- (vi) What is meant by nucleosomes?
- (vii) How DNA of chromosome work?
- (viii) Write any two main points of Watson-Crick Model of DNA.

3. Write short answers to any Five (5) questions: [5x2=10]

- (i) What is meant by template?
- (ii) Differentiate between transcription and translation.
- (iii) What is meant by central dogma?
- (iv) What do you mean by loci?
- (v) Differentiate between gene and Loci.
- (vi) Define alleles with example.
- (vii) What is difference between genes and alleles.
- (viii) What is meant by genotype? Write down its types.

4. Write short answers to any Five (5) questions: [5x2=10]

- (i) What are dominant alleles? How are these recognised.
- (ii) Why Mendel selected Pea plant for his experiment.
- (iii) Define Mendel's law of segregation.
- (iv) Differentiate between monohybrid and dihybrid cross.
- (v) Define Mendel's Law of Independent Assortment.
- (vi) What is "Punnett Square"?
- (vii) What is the use of checker board?
- (viii) What is test Cross? Why it is needed?

Part - II

NOTE:- Attempt any two questions.

[9x2=18]

5.
 - (a) Describe the structure of chromatin.
 - (b) Define genotype and phenotype.
6.
 - (a) Describe Mendel's law of segregation.
 - (b) What do you mean by dominant and recessive alleles?
7.
 - (a) Explain how Mendel proved the law of independent assortment.
 - (b) What are the homozygous and heterozygous genotypes?

Chapter Wise Self Test

7

Chapter 16: Man and His Environment

Total Marks: 12

(Objectives)

Time: 15 mint

| | (A) | (B) | (C) | (D) | | (A) | (B) | (C) | (D) |
|---|-----|-----|-----|-----|----|-----|-----|-----|-----|
| 1 | (A) | (B) | (C) | (D) | 7 | (A) | (B) | (C) | (D) |
| 2 | (A) | (B) | (C) | (D) | 8 | (A) | (B) | (C) | (D) |
| 3 | (A) | (B) | (C) | (D) | 9 | (A) | (B) | (C) | (D) |
| 4 | (A) | (B) | (C) | (D) | 10 | (A) | (B) | (C) | (D) |
| 5 | (A) | (B) | (C) | (D) | 11 | (A) | (B) | (C) | (D) |
| 6 | (A) | (B) | (C) | (D) | 12 | (A) | (B) | (C) | (D) |

Note: Four possible answers A, B, C and D to each question are given. The choice which you think is correct, fill that circle in front of that question with Marker or Pen ink. Cutting or filling two or more circles will result in zero mark in that question.

- The total amount of living or organic matter in an ecosystem at any time is called:
(A) biomass (B) energy (C) food chain (D) food web
- _____ is not a biotic factor.
(A) plant (B) animal (C) bacterium (D) soil
- Interrelationship between Organisms and their Environment is called:
(A) Mycology (B) Physiology (C) Ecology (D) Morphology
- Which product is formed during industrial nitrogen fixation?
(A) Urea (B) Ammonia (C) Nitrite (D) Carbon dioxide
- In 1927 an English Ecologist developed the concept of Ecological pyramids:
(A) Charles Elon (B) Mendel (C) Darwin (D) Lamark
- Which from of nitrogen is taken by the producers of the ecosystem?
(A) Nitrogen gas (B) Ammonia (C) Nitrites (D) Nitrates
- Which are decomposers?
(A) Plants (B) Animals (C) Algae & Mosses (D) Fungi & Bacteria
- A network of food chains which are interconnected at various trophic levels is called:
(A) biomass (B) pyramid of numbers
(C) pyramid of biomass (D) food web
- Symbiosis in which both partners get benefit is:
(A) parasitism (B) mutualism (C) predation (D) competition
- 250 years ago, the population of world was approximately _____ millions.
(A) 400 (B) 500 (C) 600 (D) 700
- The R₃ means:
(A) Refuce (B) Reuse (C) Recycle (D) Refuse
- The level of Urbanization in Pakistan was about _____ as per report of World Bank during 1998.
(A) 27% (B) 32% (C) 37% (D) 40%

Marks: 48

(Subjective)

Time: 1:45 minute

Part - I**2. Write short answers to any Five (5) questions:** [5x2=10]

- (i) Define population and community.
- (ii) What do you mean by ecosystem.
- (iii) Differentiate between autotrophs and heterotrophs with an example.
- (iv) What do you mean by consumer? Give example.
- (v) Write the difference between biotic and abiotic.
- (vi) Define community.
- (vii) Describe food web.
- (viii) Define biomass.

3. Write short answers to any Five (5) questions: [5x2=10]

- (i) In which form carbon occurs in nature?
- (ii) What is meant by Nitrogen Fixation?
- (iii) What is meant by nitrogen assimilation?
- (iv) What is atmospheric nitrogen fixation?
- (v) Define Predation.
- (vi) What is the difference between ectoparasite and endoparasite?
- (vii) State the mutual relationship between Sucker fish and Shark.
- (viii) What are endoparasites? Write an example.

4. Write short answers to any Five (5) questions: [5x2=10]

- (i) Define Parasitism.
- (ii) Define Intraspecific Interactions.
- (iii) Differentiate between renewable and non-renewable resources.
- (iv) What do you mean by 3R?
- (v) Explain Dengue Fever briefly.
- (vi) Write down the symptoms of dengue fever.
- (vii) What do you mean by Urbanization, Write its causes.
- (viii) Write names of four consumers.

Part - II**NOTE:- Attempt any two questions.**

[9x2=18]

5. (a) Explain what do you mean by the pyramids of number and biomass.
(b) Define ecosystem and its components.
6. (a) Write notes on competition, predation and symbiosis.
(b) Define food chain and food web.
7. (a) What are the different levels of ecological organization?
(b) What do you mean by the concept of 3Rs with reference to the conservation of natural resources?

Chapter Wise Self Test

8

Chapter 17:

Biotechnology

Total Marks: 12

(Objectives)

Time: 15 mint

| | | | | | | | | | |
|---|-----|-----|-----|-----|----|-----|-----|-----|-----|
| 1 | (A) | (B) | (C) | (D) | 7 | (A) | (B) | (C) | (D) |
| 2 | (A) | (B) | (C) | (D) | 8 | (A) | (B) | (C) | (D) |
| 3 | (A) | (B) | (C) | (D) | 9 | (A) | (B) | (C) | (D) |
| 4 | (A) | (B) | (C) | (D) | 10 | (A) | (B) | (C) | (D) |
| 5 | (A) | (B) | (C) | (D) | 11 | (A) | (B) | (C) | (D) |
| 6 | (A) | (B) | (C) | (D) | 12 | (A) | (B) | (C) | (D) |

Note: Four possible answers A, B, C and D to each question are given. The choice which you think is correct, fill that circle in front of that question with Marker or Pen Ink. Cutting or filling two or more circles will result in zero mark in that question.

- Animal Breeding is a form of:
 - Pharmacology
 - Cell Biology
 - Biotechnology
 - Morphology
- The term biotechnology was introduced in:
 - 1680's
 - 1960's
 - 1965's
 - 1970's
- Use of microorganism for the services of mankind is called:
 - vaccine
 - genetic engineering
 - biotechnology
 - farmacology
- Human began using microorganism since:
 - 5000 BC
 - 4000 BC
 - 3000 BC
 - 2000 BC
- Yeast used in alcoholic fermentation is called:
 - Saccharomyces cerevisiae*
 - basidiomyceter
 - zygomycetes
 - algin
- Alcoholic fermentation is carried out by:
 - Virus
 - Bacteria
 - Yeast
 - Algae
- _____ product is used in the production of plastics.
 - glycerol
 - ehanol
 - acrylic acid
 - formic acid
- Yogurt is made from milk fermentation by:
 - Saccharomyces*
 - Lactic acid bacteria
 - Yeast
 - Bacillus
- Insuline was prepared by inserting insulin gene in bacteria.
 - 1978
 - 1980
 - 1982
 - 1984
- Treatment through genes is called:
 - Gene therapy
 - Radio therapy
 - Physico therapy
 - Chemotherapy
- E-coll bacterium was created in:
 - 1980
 - 1975
 - 1977
 - 1970
- Dolly is the name of a:
 - Rabbit
 - Flower
 - Mouse
 - Sheep

Marks: 48

(Subjective)

Time: 1:45 minute

Part - I

2. Write short answers to any Five (5) questions: [5x2=10]
- When and who produced Dolly?
 - Describe the scope and Importance of biotechnology.
 - Write down the role of biotechnology in the field of medicine with example.
 - What are transgenic organisms?
 - Write down two characteristics of transgenic animals.
 - For which purposes microbes can be used?
 - Write two uses of biotechnology in the field of medicine.
 - State the role of Biotechnology in the field of Food and Agriculture.

3. Write short answers to any Five (5) questions: [5x2=10]

- Write down the role of pasture in the field of fermentation.
- Define Alcoholic Fermentation.
- Write down the name of carbohydrate fermentation.
- How fermentation take place through yeast?
- Define glycolysis.
- Write some uses of glycerol.
- How cheese is formed?
- Write down the application of fermentation in beverage products.

4. Write short answers to any Five (5) questions: [5x2=10]

- What do you mean by recombinant DNA?
- Write down the objectives of genetic engineering.
- How gene of interest can be isolated?
- How gene is entered into a vector?
- GMO is stand for?
- What are thymosin and beta-endorphin.
- What are transgenic plants and animals?
- What is gene Therapy.

Part - II

NOTE:- Attempt any two questions.

[9x2=18]

- Define biotechnology and describe its importance.
 - How would you define fermentation with reference to biotechnology?
- Describe the achievement of genetic engineering in medicine, agriculture and environment.
 - Name any two Industrial products made by fermentation. Also describe their uses in the industry.
- What basic steps a genetic engineer adopts during the manipulation of genes?
 - In biotechnology, what is meant by Genetically Modified Organism (GMO)? How is it made?

Chapter Wise Self Test

9

Chapter 18: Pharmacology

Total Marks: 12

(Objectives)

Time: 15 mint

| |
|---|
| 1 |
| 2 |
| 3 |
| 4 |
| 5 |
| 6 |

| | | | |
|-----|-----|-----|-----|
| (A) | (B) | (C) | (D) |
| (A) | (B) | (C) | (D) |
| (A) | (B) | (C) | (D) |
| (A) | (B) | (C) | (D) |
| (A) | (B) | (C) | (D) |
| (A) | (B) | (C) | (D) |

| |
|----|
| 7 |
| 8 |
| 9 |
| 10 |
| 11 |
| 12 |

| | | | |
|-----|-----|-----|-----|
| (A) | (B) | (C) | (D) |
| (A) | (B) | (C) | (D) |
| (A) | (B) | (C) | (D) |
| (A) | (B) | (C) | (D) |
| (A) | (B) | (C) | (D) |
| (A) | (B) | (C) | (D) |

Note: Four possible answers A, B, C and D to each question are given. The choice which you think is correct, fill that circle in front of that question with Marker or Pen Ink. Cutting or filling two or more circles will result in zero mark in that question.

- The drugs used to reduce the pain are known as:
(A) Antibiotics (B) Antiseptics (C) Sedatives (D) Analgesics
- Pathogens contain special proteins called:
(A) Antigens (B) Antibodies (C) Antibiotics (D) Antiseptics
- Medicines which induce sedation by reducing irritability and excitement are called:
(A) analgesics (B) antibiotics (C) sedatives (D) vaccines
- Which of the following drugs is obtained from plants:
(A) Aspirin (B) Opium (C) Cephalosporin (D) Insuline
- The cardiotonic used to stimulate the heart is called:
(A) aspirin (B) digitalis (C) paracetamol (D) analgesics
- Digitalis stimulate the organ:
(A) Brain (B) Heart (C) Kidney (D) Lungs
- Chemicals which kills micro-organisms on non-living objects are called:
(A) Antiseptics (B) Antifens (C) Antibiotics (D) Disinfectants
- Medicines with expired date are hazardous to:
(A) Heart (B) Lungs (C) Stomach (D) Kidneys
- Edward Jenner introduce vaccine of which disease?
(A) smallpox (B) AIDS (C) Hepatitis (D) Malaria
- Antibiotics prohibit or kill the:
(A) Worms (B) Virus (C) Bacteria (D) Yeast
- Which inhibits or kills bacteria within or on the body?
(A) Disinfectants (B) Antibodies (C) Antiseptics (D) Antibiotics
- Antibiotics inhibit or kill:
(A) worms (B) viruses (C) bacteria (D) yeast

Marks: 48

(Subjective)

Time: 1:45 minute

Part - I**2. Write short answers to any Five (5) questions:****[5x2=10]**

- (I) From which sources drugs are obtained?
- (II) Write about some drugs from plants and fungi.
- (III) What are synthetic drugs?
- (iv) Explain with examples the drugs obtained from mineral sources.
- (v) What are prescribed drugs?
- (vi) Differentiate between analgesic and antibiotic.
- (vii) What is difference between antiseptics and antibiotics.
- (viii) What was discovered by Sir Alexander Flemming?

3. Write short answers to any Five (5) questions:**[5x2=10]**

- (I) What is terramycin?
- (II) What are the affects of sedative drugs?
- (III) How terramycin work?
- (iv) List four names of drugs obtained from animals.
- (v) Write down the role of "Joseph Lister".
- (vi) Differentiate between antiseptics and disinfectants.
- (vii) Write down the use of diamorphine.
- (viii) Write a short note on Mari Juana.

4. Write short answers to any Five (5) questions:**[5x2=10]**

- (I) What is antibiotics? Give example.
- (II) Write down the name of two types of antibiotics.
- (III) What are the difference between bacterial and bacteriostatic antibiotics?
- (iv) What are cephalosporines and tetracyclines?
- (v) What do you know about Sulpha Drugs?
- (vi) Define antigens.
- (vii) What are the function of antibodies in blood?
- (viii) Differentiate between antigens and antibodies.

Part - II**NOTE:- Attempt any two questions.****[9x2=18]**

5. (a) What are the sources of drugs? Give examples.
(b) Write a note on resistance against antibiotics.
6. (a) Write a note on sedatives, narcotics and hallucinogens.
(b) Describe the mode of action of vaccines.
7. (a) Describe the main groups of antibiotics.
(b) Differentiate between narcotics and hallucinogens.

Chapter Wise Self Test

10

Chapter 10 to 13:

first half book

Total Marks: 12

(Objectives)

Time: 15 mint

| |
|---|
| 1 |
| 2 |
| 3 |
| 4 |
| 5 |
| 6 |

| | | | |
|-----|-----|-----|-----|
| (A) | (B) | (C) | (D) |
| (A) | (B) | (C) | (D) |
| (A) | (B) | (C) | (D) |
| (A) | (B) | (C) | (D) |
| (A) | (B) | (C) | (D) |
| (A) | (B) | (C) | (D) |

| |
|----|
| 7 |
| 8 |
| 9 |
| 10 |
| 11 |
| 12 |

| | | | |
|-----|-----|-----|-----|
| (A) | (B) | (C) | (D) |
| (A) | (B) | (C) | (D) |
| (A) | (B) | (C) | (D) |
| (A) | (B) | (C) | (D) |
| (A) | (B) | (C) | (D) |
| (A) | (B) | (C) | (D) |

Note: Four possible answers A, B, C and D to each question are given. The choice which you think is correct, fill that circle in front of that question with Marker or Pen ink. Cutting or filling two or more circles will result in zero mark in that question.

- For gaseous exchange, the leaves and young stems have _____ in their epidermis.
(A) Stomata (B) Lenticels (C) Companion cells (D) Ground cells
- The percentage of CO_2 in exhaled air is:
(A) 02% (B) 04% (C) 06% (D) 08%
- A muscular passage common to both food and air is:
(A) pharynx (B) larynx (C) alveoli (D) trachea
- The appearance of drops of water on tips of leaves is called:
(A) Guttation (B) Diffusion (C) Osmosis (D) Osmoregulation
- Ribs which protect the kidneys are:
(A) First two (B) Last two (C) Middle (D) Last four
- U Shape Renal Tubules is called:
(A) Neuron (B) Pyramids (C) Loop of Henle (D) Cortex
- Which type of coordination is found in plants?
(A) Chemical (B) Mechanical (C) Electrical (D) Nervous
- The myelin Sheath is formed by:
(A) Nodes of Ranvier (B) Axons (C) Dendrites (D) Schwann cells
- The name of gland present below the human neck region is:
(A) Parathyroid (B) Thyroid (C) Adrenal gland (D) pancreas
- All these are the parts of Axial Skeleton of humans except:
(A) Ribs (B) Sternum (C) Shoulder girdle (D) vertebral column
- The cartilage found in intervertebral discs is:
(A) Hyaline (B) Fibrous (C) Matrix (D) Elastic
- The skeleton of adult human has the number of hard bones:
(A) 200 (B) 196 (C) 206 (D) 201

Marks: 48

(Subjective)

Time: 1:45 minute

Part - I

2. Write short answers to any Five (5) questions: [5x2=10]

- (I) What is the function of mucus in nasal cavity?(write any two)
- (II) What is pharynx?
- (III) Define epiglottis. Write its function.
- (iv) What is larynx? Where it is located?
- (v) Describe windpipe or trachea. Where it is located?
- (vi) Define Bronchi and Bronchioles.
- (vii) What do you mean by stomata? Write its function.
- (viii) How calcium oxalate is removed in tomato plant as metabolic waste?

3. Write short answers to any Five (5) questions: [5x2=10]

- (I) What is meant by selective re-absorption?
- (II) Write down the osmoregulatory function of kidney.
- (III) When does kidney produce hypotonic and hypertonic urine.
- (iv) What is loop of henle?
- (v) Differentiate between nervous coordination and chemical coordination?
- (vi) What is meant by response?
- (vii) What is nerve impulse?
- (viii) What is meant by saltatory impulses?

4. Write short answers to any Five (5) questions: [5x2=10]

- (i) Name the hormones secreted by posterior lobe of pituitary gland.
- (ii) What do you mean by goiter?
- (III) What do you mean by motion? Describe its types.
- (iv) Write down the difference between elastic cartilage and fibrous cartilage.
- (v) Define bone with example.
- (vi) Write down the two function of bones.
- (vii) Where immovable joints found?
- (viii) What do you mean by slightly moveable joints?

Part - II

NOTE:- Attempt any two questions.

[9x2=18]

- 5. (a) How do the different parts of the plant body exchange gases with the environment?
- (b) How does the tobacco smoke damage the respiratory system?
- 6. (a) How do the plants excrete extra water and salts from their bodies?
- (b) What is hypertonic urine? Write it with reason.
- 7. (a) Define neuron and describe the structure of a general neuron.
- (b) What is the role of skeleton in support and movement?

Chapter Wise Self Test

11

Chapter 14 to 18: Second half book

Total Marks: 12

(Objectives)

Time: 15 mint

| | | | | | | | | | |
|---|-----|-----|-----|-----|----|-----|-----|-----|-----|
| 1 | (A) | (B) | (C) | (D) | 7 | (A) | (B) | (C) | (D) |
| 2 | (A) | (B) | (C) | (D) | 8 | (A) | (B) | (C) | (D) |
| 3 | (A) | (B) | (C) | (D) | 9 | (A) | (B) | (C) | (D) |
| 4 | (A) | (B) | (C) | (D) | 10 | (A) | (B) | (C) | (D) |
| 5 | (A) | (B) | (C) | (D) | 11 | (A) | (B) | (C) | (D) |
| 6 | (A) | (B) | (C) | (D) | 12 | (A) | (B) | (C) | (D) |

Note: Four possible answers A, B, C and D to each question are given. The choice which you think is correct, fill that circle in front of that question with Marker or Pen ink. Cutting or filling two or more circles will result in zero mark in that question.

- Vegetative propagation in mint takes place by:**

(A) Rhizome (B) Corms (C) Leaves (D) Suckers
- Calyx is the outer most whorl of the flower and bears the colour:**

(A) Red (B) Green (C) Blue (D) White
- Female reproductive part of flower is called:**

(A) Androecium (B) gynoecium (C) Calyx (D) Corolla
- James Watson and Francis Crick proposed the structure of DNA in:**

(A) 1951 A.D (B) 1952 A.D (C) 1953 A.D (D) 1954 A.D
- The punnett square is also called:**

(A) score board (B) checker board (C) genetic board (D) mendel board
- Abiotic component of the ecosystem is:**

(A) Producers (B) Herbivores (C) Light (D) Carnivores
- The type of symbiosis in which both partners get benefit, is the example of:**

(A) Mutualism (B) Competition (C) Parasitism (D) Predation
- This product is used in the production of soaps:**

(A) Formic acid (B) Ethanol (C) Glycerol (D) Acrylic acid
- When was the work on Genetic Engineering started:**

(A) 1930 (B) 1940 (C) 1944 (D) 1970
- Which of the following drugs is obtained from plants?**

(A) Aspirin (B) Opium (C) Digitalis (D) Insulin
- Medicines with expired date are hazardous to:**

(A) Heart (B) Lungs (C) Stomach (D) Kidneys
- Sir Alexander Fleming discovered the:**

(A) Tetracycline (B) Aspirine (C) Cephalopirin (D) Penicillin

Marks: 48

(Subjective)

Time: 1:45 minute

Part - I

2. Write short answers to any Five (5) questions: [5x2=10]

- (i) Define binary fission with example.
- (ii) Define vegetative propagation.
- (iii) Differentiate between cloning and tissue culture.
- (iv) What do you mean by sporophyte generation?
- (v) What is meant by spermatogenesis?
- (vi) What is meant by homologous chromosomes?
- (vii) Define Homozygous genotype.
- (viii) Differentiate between homozygous and heterozygous genotype.

3. Write short answers to any Five (5) questions: [5x2=10]

- (i) What is meant by transcription?
- (ii) What do you mean by Genotype and Phenotype?
- (iii) Define ecology.
- (iv) What is biosphere?
- (v) What is the role of food chain in making food web?
- (vi) Define Symbiosis. Write its types.
- (vii) Define commensalism with one example.
- (viii) Write down the role of biotechnology to deal with environmental issues.

4. Write short answers to any Five (5) questions: [5x2=10]

- (i) Define Fermentation? Write the names of two basic types of fermentation.
- (ii) Write down two applications of fermentation.
- (iii) Write down two uses of formic acid.
- (iv) Describe the advantages of fermented food.
- (v) What are analgesics? Give examples.
- (vi) What are vaccines? Give examples.
- (vii) Define vaccine. Who introduced it?
- (viii) Give the difference between broad spectrum and narrow spectrum antibiotics.

Part - II

NOTE:- Attempt any two questions.**[9x2=18]**

- 5. (a) Explain, how the epigeal and hypogeal germinations are different?
(b) What structural adaptations will you find in a wind-pollinated flower?
- 6. (a) Describe Mendel's law of segregation.
(b) What are the homozygous and heterozygous genotypes?
- 7. (a) Write notes on competition, predation and symbiosis.
(b) In biotechnology, what is meant by Genetically Modified Organism (GMO)?
How is it made?

Chapter Wise Self Test

12

Chapter 10 to 18: Full Book 1

Total Marks: 12

(Objectives)

Time: 15 mint

| | | | | | | | | | |
|---|-----|-----|-----|-----|----|-----|-----|-----|-----|
| 1 | (A) | (B) | (C) | (D) | 7 | (A) | (B) | (C) | (D) |
| 2 | (A) | (B) | (C) | (D) | 8 | (A) | (B) | (C) | (D) |
| 3 | (A) | (B) | (C) | (D) | 9 | (A) | (B) | (C) | (D) |
| 4 | (A) | (B) | (C) | (D) | 10 | (A) | (B) | (C) | (D) |
| 5 | (A) | (B) | (C) | (D) | 11 | (A) | (B) | (C) | (D) |
| 6 | (A) | (B) | (C) | (D) | 12 | (A) | (B) | (C) | (D) |

Note: Four possible answers A, B, C and D to each question are given. The choice which you think is correct, fill that circle in front of that question with Marker or Pen ink. Cutting or filling two or more circles will result in zero mark in that question.

- Most of the gaseous exchange in a plant leaf occurs through:**
(A) Cuticle (B) General surface (C) Lenticels (D) Stomata
- Length of trachea is:**
(A) 12 cm (B) 14 cm (C) 16 cm (D) 18 cm
- Waste materials that are secreted by Keekar:**
(A) Gums (B) Latex (C) Resins (D) Mucilage
- The organ that filters the blood:**
(A) Kidney (B) Stomach (C) Brain (D) Intestine
- Part of brain associated with pain perception and conciousness is called.**
(A) cerebrum (B) thalamus (C) hypothalamus (D) forebrain
- The following are all hormones except:**
(A) glucagon (B) pepsinogen (C) thyroxin (D) Insulin
- Pelvic gridle has _____ bones.**
(A) 2 (B) 3 (C) 4 (D) 5
- Which one of the following disease is cured by vaccines?**
(A) Aids (B) Cancer (C) Small pox (D) Malaria
- The example of corms is:**
(A) Ferns (B) Ginger (C) Onion (D) Dasheen
- Genes consist of:**
(A) RNA (B) mRNA (C) Protein (D) DNA
- Biosphere is about _____ thick.**
(A) 15 kilometres (B) 20 kilometres (C) 25 kilometres (D) 30 kilometres
- The microorganism used for formation of Farmic acid is:**
(A) Saccharomyces (B) Bacillus (C) Aspergillus (D) Cocci

Marks: 48

(Subjective)

Time: 1:45 minute

Part - I

2. Write short answers to any Five (5) questions: [5x2=10]

- (i) Write down the structure and function of Alveolus?
- (ii) What is meant by respiratory centre.
- (iii) What is double pneumonia?
- (iv) What is meant by stomata? Write their function.
- (v) What is meant by concentrated urine? Give its reason.
- (vi) What is meant by Renal Pelvis?
- (vii) Define Receptors and Give At least two examples.
- (viii) Where is hypothalamus located? Write about its two functions.

3. Write short answers to any Five (5) questions: [5x2=10]

- (i) Write down the functions of insulin and glucagon hormones.
- (ii) What is skeletal system? Write down its function.
- (iii) Define endoskeleton and exoskeleton with example.
- (iv) Define cartilage and write names of its types.
- (v) Write down procedure of tissue culture.
- (vi) Differentiate between self and cross pollination.
- (vii) How seed and fruit are developed?
- (viii) What do you mean by dominant and recessive alleles?

4. Write short answers to any Five (5) questions: [5x2=10]

- (i) Write down the name of nitrogenous basis in double helical structure of DNA.
- (ii) What do you mean by trophic level?
- (iii) Write down four symptoms of Dengue fever.
- (iv) Define biotechnology. When insulin was prepared by using bacteria?
- (v) Write down the advantages of using fermenter.
- (vi) From when and which organism human growth hormone are produced?
- (vii) Name any four sources of Medicinal Drug?
- (viii) What is Iodine tincture? Write its use.

Part - II

NOTE:- Attempt any two questions. [9x2=18]

- 5. (a) Explain Stomata.
- (b) Describe the process of selective re-absorption in the kidneys.
- 6. (a) Explain what can happen if there is no coordination in the activities of organisms?
- (b) Describe the structure of chromatin.
- 7. (a) Explain what do you mean by the pyramids of number and biomass.
- (b) Define biotechnology and describe its importance.

Chapter Wise Self Test 13

Chapter 10 to 18: Full Book 2

Total Marks: 12

(Objectives)

Time: 15 mint

| | | | | | | | | | |
|---|-----|-----|-----|-----|----|-----|-----|-----|-----|
| 1 | (A) | (B) | (C) | (D) | 7 | (A) | (B) | (C) | (D) |
| 2 | (A) | (B) | (C) | (D) | 8 | (A) | (B) | (C) | (D) |
| 3 | (A) | (B) | (C) | (D) | 9 | (A) | (B) | (C) | (D) |
| 4 | (A) | (B) | (C) | (D) | 10 | (A) | (B) | (C) | (D) |
| 5 | (A) | (B) | (C) | (D) | 11 | (A) | (B) | (C) | (D) |
| 6 | (A) | (B) | (C) | (D) | 12 | (A) | (B) | (C) | (D) |

Note: Four possible answers **A, B, C** and **D** to each question are given. The choice which you think is correct, fill that circle in front of that question with Marker or Pen ink. Cutting or filling two or more circles will result in zero mark in that question.

- Most of the gaseous exchange in a leaf occurs through:**
 - Stomata
 - General surface
 - Cuticle
 - Lenticels
- Where does the gaseous exchange occur in humans?**
 - Pharynx
 - Trachea
 - Bronchi
 - Alveoli
- Which organ is responsible for filtering the blood?**
 - Intestine
 - Brain
 - Stomach
 - Kidney
- The tube between kidney and urinary bladder is the:**
 - Ureter
 - Urethra
 - Renal tubule
 - Nephron
- Processes that carry nerve impulses away from the cell body are called:**
 - Axons
 - Dendrites
 - Synapses
 - Myelin sheath
- All of these are hormones except:**
 - Insulin
 - Thyroxin
 - Glucagon
 - Pepsinogen
- Find the ball-and-socket joints.**
 - Joint in the finger bones
 - Joints of neck and skull bones
 - Joint at elbow
 - Joint at pelvic girdle and leg bones.
- What do some bones produce?**
 - Mucous
 - Hormones
 - Oxygen
 - Blood cells
- Pollination is the transfer of pollens from:**
 - Anther to stigma
 - Stigma to anther
 - Sepal to petal
 - Petal to sepal
- How many genetically different kinds of gametes an individual with genotype AAbb can produce?**
 - 1
 - 2
 - 4
 - 8
- Organisms in the ecosystem that are responsible for the recycling of plant and animal wastes are:**
 - Producers
 - Consumers
 - Decomposers
 - Competitors
- Which of the following drugs is obtained from plants?**
 - Aspirin
 - Opium
 - Cephalosporin
 - Insulin

Marks: 48

(Subjective)

Time: 1:45 minute

Part - I**2. Write short answers to any Five (5) questions: [5x2=10]**

- (i) Differentiate between breathing and cellular respiration.
- (ii) What is the importance of C-shaped cartilaginous rings in the wall of trachea?
- (iii) What are Alveolar ducts and Alveoli?
- (iv) What is Hilus?
- (v) Give difference between afferent and efferent arteriole.
- (vi) Identify the two types of coordination in living organisms.
- (vii) What are the main components of coordination?
- (viii) Define the terms; hormone and endocrine system.

3. Write short answers to any Five (5) questions: [5x2=10]

- (i) Differentiate between hyalin cartilage and fibrous cartilage.
- (ii) Differentiate between chondrocytes and osteocytes.
- (iii) Differentiate between movement and locomotion.
- (iv) "Parthenogenesis is a type of asexual reproduction". Give comments on this statement?
- (v) What is Oogenesis?
- (vi) HIV stand for?
- (vii) What is phenotype.
- (viii) Define Gene.

4. Write short answers to any Five (5) questions: [5x2=10]

- (i) Define food chain and give an example.
- (ii) What is meant by pyramid of biomass?
- (iii) What are biological nitrogen fixation?
- (iv) What are the products of the two types of carbohydrate fermentation?
- (v) What do you mean by interferons?
- (vi) What is urokinase? Write down its function.
- (vii) Define pharmacology and distinguish it from pharmacy.
- (viii) What is marijuana? To which category of addictive drugs, it belongs?

Part - II**NOTE:- Attempt any two questions. [9x2=18]**

- 5. (a) Write down the steps of inhalation and exhalation.
(b) What is the functional unit of the kidney? Describe its structure and draw a labeled diagram.
- 6. (a) What are ligaments and tendons? What function do they perform?
(b) Outline the methods of asexual reproduction in animals.
- 7. (a) What are the different levels of ecological organization?
(b) Describe the main groups of antibiotics.

[illegible]